The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, NO. 3 — COPYRIGHT, 1941, BY AMERICAN MEDICAL ASSOCIATION CHICAGO, ILLINOIS — JULY 19, 1941

INDUSTRIAL HEALTH MARCHES ON

CHAIRMAN'S ADDRESS

C. D. SELBY, M.D.

DETROIT

Your chairman was secretary of this section in 1920. This is mentioned only to serve as a landmark. In that year industrial medicine was merged with preventive medicine and public health in the Scientific Assembly of the American Medical Association.

Only now is the profession beginning to see that this relationship exists in practice as well as in the Scientific Assembly. I say "beginning," for the majority of physicians even yet think of industrial medicine as the care of compensation cases, and they believe that ordinary medical knowledge and experience are all sufficient for medical service in industry. Admitting the importance of medical knowledge in this and all other medical specialties, let us see how much of industrial medicine is actual practice of medicine and how much is prevention of disease.

Practice in industrial medicine is limited to the care of occupational injuries and diseases. All other functions are preventive in character and purpose. Some index of the relative values of the two, those functions which can be regarded as remedial and those regarded as preventive, appears in the relative proportions of time lost by industrial workers from industrial causes on the one hand and nonindustrial causes on the other.

The 1940 experience of the Owens-Illinois Company of Toledo illustrates this point and clearly indicates the magnitude of the opportunities for preventive medicine. Mr. W. G. Hazard,[1] of the personnel department of this company, reports that with an average of 14,580 employees on the payroll each month during 1940 there were 23,700 absences from work during the year, 60 per cent of which were for medical reasons. Of these absences only 1 per cent were from industrial causes, industrial injuries and occupational diseases; 59 per cent were from nonindustrial causes, the ordinary sicknesses not at all related to occupation, and injuries received outside the places of work; 31 per cent asked permission to be absent, and 9 per cent gave no reason for their absence.

Let us look at these figures in another way. Of all absences, 1 per cent were of such nature as to require treatment by industrial physicians or specialists, to whom they were referred for the care of industrial injuries or occupational diseases. Fifty-nine per cent were of such nature as to require treatment, but by the general medical profession, not by industrial physicians, because they were not occupational in origin, being purely personal and arising from causes outside the work.

From these figures it is seen that only 1 per cent of all disablements call for the type of medical service in industry that many physicians consider to be industrial practice. When the American Medical Association merged industrial medicine with public health and preventive medicine in the Scientific Assembly, it foresaw the need of disease prevention in relation not only to this 1 per cent, but also to the other 59 per cent who are disabled from ordinary sicknesses and nonoccupational injuries.

Industrial medicine is attempting to reduce all disabilities from sickness. Therefore it needs the full cooperation of public health agencies and the general practicing profession. How much the general practitioners are involved is illustrated further by the experience of one automobile company in its widely scattered groups of employees aggregating, in 1940, a total of 187,773, male and female. There was a total of 21,173 who were disabled some time during that year for periods exceeding seven days from nonoccupational causes—slightly in excess of 11 per cent. The number of days lost was 828,988. The average loss per case was thirty-nine and two-tenths days and the average loss per employee was four and forty-two one hundredths days.

The greatest sources of lost time are given in the accompanying table.

The importance of the nonoccupational sicknesses, excluding nonoccupational injuries, become more apparent when directly compared with the occupational diseases. In this group of 187,773 workers, the latter caused 69 persons to lose time and they had 2,483 days of disability. The nonoccupational illnesses caused 18,944 persons to lose time, and they had 742,937 days of disability. The ratio of days lost from occupational and nonoccupational sicknesses was 1 to 300.

These data on ordinary sickness in the employed population should give our profession cause for thought. They suggest that our greatest opportunities for progress in disease prevention lie in the control of those conditions which are the greatest sources of lost time, namely appendicitis, the genitourinary diseases, the virus infections and diseases of the tonsils. These are in the general medical field, and they emphasize the responsible part that the general medical profession must play in the safety of the employed population.

INDUSTRIAL HYGIENE ACTIVITIES OF NATIONAL DEFENSE

With this background let us see what is happening in the industrial hygiene activities of national defense. The Administrator of the Federal Security Agency,

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Hazard, W. G.: Trained Nurse and Hospital Review, May 1941.

Mr. Paul V. McNutt, has been made coordinator of all health, medical, welfare and related activities of national defense.

He[2] has said "From the vantage point which I occupy I have tried to emphasize the spots in the public health scene which I think most need emphasis. The problems of industrial hygiene, of medical and hospital care and of nutrition seem to me the most immediate."

Mr. McNutt is authorized, with the approval of the President, to appoint such advisory committees and subcommittees as he may find necessary or desirable to assist him in his coordinating duties. One is known as the Subcommittee on Industrial Health and Medicine and it functions through the Health and Medical Committee, of which Dr. Irvin Abell is chairman. In this manner it acts as an adviser to the coordinator on industrial health and medical activities related to national defense.

The Division of Industrial Hygiene of the National Institute of Health, U. S. Public Health Service, because of its experience, facilities and relationship with other agencies, both governmental and nongovernmental, was recommended by the subcommittee to assume the leadership in a program for the protection of the health of workers in defense industries.

Sources of Lost Time

	Number	Days Lost
Appendicitis	2,199	101,611
Nonoccupational injuries	2,229	86,051
Genitourinary diseases	1,143	84,061
Influenza	1,772	43,069
Tonsillar infections	1,871	38,034

Such a program was adopted at a conference in February 1941, which was sponsored by the Division of Industrial Hygiene of the National Institute of Health and attended by representatives from the various state industrial hygiene units and by the Subcommittee on Industrial Health and Medicine. The objectives are:

1. The evaluation and control of the various health hazards resulting from exposure to dusts, fumes, gases, vapors and other materials.

2. The provision of advisory services to industry in connection with the construction of new plants and the renovation of old plants, so that adequate facilities for health and safety may be included in the plans.

3. The promotion of physical examinations and medical services for workers, in order that the benefits of preventive and curative medicine may be applied promptly to their individual health problems.

4. The control of communicable diseases among workers through a control program developed in connection with the general public health services of the community.

This program is now being applied in each important industrial area. Additional funds, made available by Congress, have enabled the Division of Industrial Hygiene to assign mobile units, each unit consisting of a physician and an engineer, to work in key defense industries in cooperation with various state departments of health. The Division of Industrial Hygiene is also cooperating with the War Department in its program to protect the health of civilians employed in industrial production under its direct supervision and in its jurisdiction over contract production.

2. McNutt, Paul V.: Special Problems in Our Health, Annual Conference of State and Territorial Health Officers with U. S. Public Health Service, Washington, D. C., April 29, 1941, Defenses, Pub. Health Rep. **56:** 988 (May 9) 1941.

In the program for the protection of the health of workers in defense industries, the physician also bears certain responsibilities. These are (1) to inform himself concerning occupational diseases so that he will recognize such diseases readily in the course of his practice, (2) to report to the proper authorities the occurrence of occupational diseases among workers coming to his attention, (3) to stimulate preemployment and periodic physical examination of workers in industry and (4) to cooperate with the local health agency which is responsible for protecting the health of the workers.

It is emphasized that the industrial hygiene program which has been outlined has been created, not as an emergency improvisation, but as an integral part of our national life in the future, and that the cooperation of all concerned with industrial health is required if industrial workers are to attain a high level of efficiency and health.

The American Medical Association must have realized this when it created the Council on Industrial Health, the principal object of which has been a better orientation of the medical profession in its relations to industrial health. This has occupied a significant place in the development and early activities and scope of the Council.

"In this particular direction," said Dr. Carl M. Peterson, Secretary of the Council. "I am convinced that the majority of the medical profession has come to know that there is more to industrial health than merely remedial activities, that as soon as the physicians acknowledge the phase of preventive medicine in industrial work they will begin to make their real contributions."

RESPONSIBILITY OF THE MEDICAL PROFESSION

Through its annual conference and the activities of the committees on industrial health in the state and county medical societies, the Council is fostering a sense of responsibility for the health of the workers on the part of all elements of the medical profession. And no doubt its major contribution will be to demonstrate that industrial health work must go through three principal channels: the industrial hygienists, the physicians in industry and the private practitioners, both in the clinical specialties and in general practice.

The Council has stimulated educational activity at all levels, undergraduate, postgraduate and graduate. Truly significant of progress in this direction is the postgraduate work of the various county and state medical societies, because the immediate needs in industrial health must be met by the general practitioners of medicine.

Another significant development of the Council is its move to register men limiting their practice to industrial health or giving special attention to it. More recently there has been an attempt to register those who wish to serve in industry, whether qualified or not. The registration of these, however, has introduced a new problem; namely, placement in industry.

How can these doctors, who wish to serve in industry, find the opportunity to do so? Doctors do not offer their services; they must wait until invited.

To a degree, the profession is preparing itself, in this fashion, faster than industry. That brings up the question of whether physicians, by educating themselves in industrial medicine, can increase the demand for their services or should this preparation follow as a conse-

quence of an increased interest on the part of industry and, if so, how can the profession stimulate increase of interest?

There are several moves on the part of industry toward this end, and in time they will have their results. But in the meantime there seems to be no real reason why the medical profession should remain passive. The Michigan Committee on Industrial Health has decided to join with the Manufacturers Association in the promotion of interest in industrial health, with emphasis on physical examinations. The manufacturers are to promote the interest and the committee to carry on the educational campaign with the doctors. Such a joint effort is being considered in two important manufacturing centers, and preliminary arrangements are now being effected.

The Connecticut State Medical Society is making a notable contribution through a joint committee on industrial health of the state society and the Manufacturers Association of Connecticut, Inc. This committee has published and distributed among employers a well prepared booklet entitled "Conservation of Man Power Through Extension and Improvement of Industrial Medical Service." It is accompanied by a questionnaire the return of which will develop valuable information about industrial medical service as it now actually exists in Connecticut. No doubt there are similar activities in other states. With such activity in the medical profession the general practitioners will become increasingly interested and consequently more effective in meeting their responsibilities with regard to industrial health.

Even so, there will always be a place in the scheme of industrial medicine for the full time industrial physicians who are coming more and more to be regarded as specialists. The large industries will always have need for such, while the smaller plants will continue to look to the general practitioners for their services. The full time men will, for the most part, be more active in the American Association of Industrial Physicians and Surgeons than they are in this section. That is an organization which is making notable contributions to progress in this field. A recent meeting in Pittsburgh had all the attributes of a postgraduate course, and this will be regarded as having been such.

At the request of Surgeon General Parran, the American Association of Industrial Physicians and Surgeons created an advisory committee that conceived the principles on which the present national defense activities in industrial hygiene are founded. Among its chief recommendations was one for such coordination as is now being effected by the Subcommittee on Industrial Health and Medicine.

The emphasis thus far has been placed on relationships of physicians to the industrial health movement and particularly the service they are rendering directly in industry. We must not overlook the preventive medicine and public health aspects. Preventive medicine has made notable contributions and is continuing to do so, largely through studies in industrial toxicology and of the exposures arising out of the use of toxic materials in industry.

In the control of industrial conditions that cause occupational diseases and impair health, the industrial hygiene engineers have been most active. They have made great progress in this direction and, frankly, to them must go most of the credit for the splendid occupational disease record of industry. The industrial hygiene engineering field is represented in a national way by two important organizations—the American Association of Industrial Hygienists, which meets annually with the American Association of Industrial Physicians and Surgeons and the Industrial Hygiene Section of the American Public Health Association, which has been active for about twenty-five years.

It is not possible to comment on all of the organizations now active in promoting industrial health. Suffice it to say that there is much activity, and it is not limited to medical organizations. In this is a direct challenge to this section. Here we have a mergence of the three medical fields that are most concerned with a large segment of population—employed adults. And as a nation concerned with defense we are looking to that segment for materials which are essential to our defense. Admitting the importance of public health and preventive medicine in the lives of all age groups, whether employed or not, may I suggest that the Section on Preventive and Industrial Medicine and Public Health can, with ample justification, regard the health of the industrial population as its national responsibility for the period of national defense.

3044 West Grand Boulevard.

ENCEPHALITIS IN THE YAKIMA VALLEY

MIXED ST. LOUIS AND WESTERN EQUINE TYPES

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SAN FRANCISCO

For a number of years, in the summer months occasional cases of encephalitis of unknown cause have occurred in human beings in the Yakima valley, Washington. In 1939 the number of these cases first reached epidemic proportions. During the same period deaths occurred sporadically and in small outbreaks among horses, attributed generally to forage poisoning or botulism or occasionally simply diagnosed as blind staggers. In 1939 more than 600 cases of encephalomyelitis in horses were reported for the same region in addition to 31 cases of encephalitis in man. It was presumed at this time that both human beings and horses had been infected with the virus of Western equine encephalomyelitis, and a few samples of blood serum from each group, when tested by Miss Beatrice Howitt, of the Hooper foundation, were found to contain antibody for this virus.

In 1940 encephalitis again appeared in epidemic proportions, and on August 24, by request of the Washington State Health Department to the Hooper Foundation, an investigation of the epidemic was begun. At this time about 35 cases of encephalitis in man had been reported, and at the end of the epidemic this number had reached 86. During the same period about 20 cases of encephalomyelitis in horses were known to have occurred. Prior to this date, members of the state health department and of the Yakima city and county health department had made a preliminary investigation of numerous cases, and throughout the course of the outbreak and during the follow-up period they assisted and cooperated.

The survey had as its purposes to determine if possible the cause and the mode of transmission of the prevalent disease, in order that control measures might be instituted; to make an analysis of the clinical and

Aided by a grant from the National Foundation for Infantile Paralysis, Inc.
From the George Williams Hooper Foundation, University of California.

laboratory findings as a means to improved differential diagnosis in this group of virus infections of the central nervous system, and to analyze and weigh the effectiveness of the therapeutic measures employed. The results of the epidemiologic part of the survey are presented in detail in a separate publication.[1] Only a brief review

TABLE 1.—*Results of Neutralization Tests on Patients and Controls*

Neutralization Test	Controls		Patients	
	Number	Percentage	Number	Percentage
Positive for Western equine virus only	3	4.0	14	28
Positive for St. Louis virus only	19	25.4	8	16
Positive for both	2	2.7	28	56
Negative for both	51	67.9	0	0
Total tested	75	100.0	50	100
Total positive for Western equine virus	5	6.7	42	84
Total positive for St. Louis virus	21	28.0	36	72

will be given here of some of the conclusions of this phase of the study, and no attempt will be made to present much of the evidence on which these are based.

EPIDEMIOLOGIC ASPECTS

Early in the investigation, it became obvious that from both the clinical and the epidemiologic standpoint the outbreak presented certain characteristics generally attributed to one or the other of two epidemic virus encephalitides, that due to the St. Louis virus and that due to the virus of equine encephalomyelitis, Western type, and on the basis of available information neither of these alone would account for the features of this particular outbreak. Since in earlier studies Howitt [2] had found neutralizing antibodies for the St. Louis virus as well as for the Western equine virus in some of the serums from patients in the San Joaquin valley of California, the possibility of the two viruses being associated seemed likely.

Blood was taken for neutralization tests against both viruses from most of the 86 reported patients as well as from a comparable control group of 75 persons not suffering from encephalitis. Miss Beatrice Howitt performed these neutralization tests.

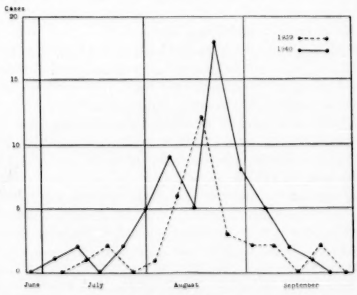
After a careful analysis of clinical data, autopsy material and the results of the neutralization tests, 58 cases of encephalitis in human beings were definitely classified as cases of encephalitis type B (St. Louis or equine or both). Except for 2 fatal cases, the diagnoses in all this group were confirmed by autopsy, by examination of the spinal fluid or by neutralization tests. Neutralization tests were performed on the serum in 50 of the 58 accepted cases, and all the serums neutralized at least one of the two viruses. No blood was obtained from 7 patients who died and from 1 child aged 2 years.

A number of other patients probably suffered from the same disease, and the clinical course of some was indistinguishable from that of encephalitis, but when certain data were not obtained and the diagnosis could not be so positively determined, these patients were excluded from the series. Seventeen cases of poliomyelitis were reported from Yakima County during the same season, a part of a large epidemic centering in Tacoma and Seattle, and it is possible that in several of the children reported as having encephalitis, whose serum failed repeatedly to neutralize either of the encephalitis viruses, the condition was due to poliomyelitis virus. Five girls 8 to 12 years of age were in this group. Several children whose illness was diagnosed first as encephalitis were later found to have poliomyelitis.

In table 1 are shown the results of the neutralization tests on the patients and on a control group. It will be noted that 28 per cent of the control group had antibodies to the St. Louis virus, a finding similar to that of Muckenfuss, Smadel and Moore [3] in their study of a postepidemic sample of the St. Louis population. Thus it would appear probable that the St. Louis virus had been present in the Yakima valley for some time. Further support was given this supposition by finding that the mean length of residence in the Yakima valley was significantly longer among those whose serum neutralized the St. Louis virus, in both patient and control group, than among those who failed to neutralize that virus. No significant age difference, however, was demonstrable among the patients such as that found by Howitt [2] in the San Joaquin valley, which led her to believe that many of those with antibody to the St. Louis virus had acquired it in the Southwest prior to their migration to California.

The significance of the results of the neutralization test for the St. Louis virus became more apparent when they were compared with the results obtained by the same laboratory [4] on samples of serum from patients and controls in other Western areas and were found to differ in a significant manner.

Most of the samples of blood were taken early in the course of the disease, but of 2 patients whose blood serum was tested early and late, 1 showed an increase in antibody titer for the St. Louis virus (change from negative to strongly positive) and the other a similar change in respect to the Western equine virus. This is generally accepted to be nearly as specific a diagnostic finding as actual isolation of the virus. Suitable autopsy



Incidence of encephalitis in Yakima County, 1939 and 1940.

material for study of the virus was obtained from only 1 patient, but unfortunately no virus was isolated. Any conclusion relative to the cause must therefore be based on clinical, epidemiologic and indirect labora-

1. Hammon, W. M., and Howitt, B. F.: Epidemiological Aspects of Encephalitis in the Yakima Valley: Mixed St. Louis and Western Equine Types, to be published.

2. Howitt, B. F.: Antiviral Substances to the Virus of Encephalitis (St. Louis Type) in Serums Collected in California, Proc. Soc. Exper. Biol. & Med. **38**: 334 (April) 1938. Viruses of Equine and of St. Louis Encephalitis in Relationship to Human Infections in California, Am. J. Pub. Health **29**: 1083 (Oct.) 1939.

3. Muckenfuss, R. S.; Smadel, J. E., and Moore, E.: The Neutralization of Encephalitis Virus (St. Louis, 1933) by Serum, J. Clin. Investigation **17**: 53 (Jan.) 1938.

4. Buss, W. C., and Howitt, B. F.: Human Equine Encephalomyelitis in Kern County, California, 1938, 1939 and 1940, Am. J. Pub. Health, to be published. Howitt.[5]

5. Footnote deleted on proof.

tory evidence, but this all appears to support the same conclusion, that the outbreak was caused by the two viruses acting either singly or together. Evidence has been presented elsewhere by Hammon and Howitt [1] in support of the hypothesis that a number of mixed infections occurred, and laboratory evidence of the possibility of such mixed infection has since been demonstrated by Hammon.[6]

TABLE 2.—*Incidence of Encephalitis by Age Groups and by Sex*

Age Groups	Number of Patients		
	Males	Females	Total
0- 4	3	1	4
5- 9	2	0	2
10-14	0	0	0
15-19	3	0	3
20-29	6	0	6
30-39	7	0	7
40-49	5	0	5
50-59	7	4	11
60-69	7	4	11
70	7	2	9
Total	47	11	58

The first case occurred early in July, but the peak of the epidemic was sharp, with 18 patients having the onset of disease during the third week of August. The number then fell off rapidly, with the last proved attack occurring during the third week of September. The 1939 epidemic had a similar seasonal pattern. The accompanying chart shows the incidence of cases for both years.

The outbreak was restricted to the Yakima valley, a fertile agricultural area depending entirely on irrigation for all crops. The distribution of the cases fitted approximately the distribution of orchard lands rather than of land supporting other types of crops. The infection was encountered both in rural and in urban areas, but the rates were higher in rural and suburban districts. The morbidity rate for Yakima County excluding the city of Yakima was 62.7 per 100,000, and for Yakima it was 44.1, although the city was near the center of the epidemic region. Rates where the population was known were highest in small suburban towns near Yakima. A similar distribution was noted in the St. Louis outbreak of 1933.

Thirteen deaths occurred, resulting in a case fatality rate of 22.4 per cent, comparable to that of 20 per cent found in the St. Louis outbreak,[7] much lower than that of 66 per cent encountered in the epidemic due to the Eastern equine virus in Massachusetts [8] and much higher than the 6.9 per cent for the epidemic caused principally by the Western equine virus in the San Joaquin valley.[4]

Cases were encountered in all age groups ranging from 2 to 80 years, but the rates obviously increased progressively with age (table 2). The average age was 45.7 and the median 51. This is comparable to the findings in the St. Louis outbreak [7] but not to those reported by Feemster [8] in the Massachusetts outbreak due to the Eastern equine virus (affecting chiefly infants and children) or to those reported by Buss and Howitt [4] for the San Joaquin valley (predominantly affecting infants and children).

The sex distribution was not comparable to that in any previously reported outbreak proved to be due to either of these viruses; 81 per cent of the patients were males, and except for a 2 year old girl no female under 52 was affected. Occupational and environmental factors appeared to be responsible at least in part for this peculiar age and sex distribution.

Most patients lived near areas of potential mosquito breeding (irrigation ditches and irrigated land, serving as excellent breeding places for Aedes mosquitoes), but such areas were a common feature of all rural and semi-rural areas in the valley. No survey was made of the prevalence of mosquitoes. Although most persons in the community who were asked believed 1940 to have been an average or subaverage year for mosquitoes, little weight can be placed on such opinion. For persons whose blood neutralized only the St. Louis virus, there was a correlation (the numbers were, however, small) with proximity to standing polluted water, and this factor did not correlate for the group whose serums neutralized only the equine virus. This finding is similar to that pointed out by Leake, Musson and Chope [9] and by Jones and Bozalis [10] relative to the St. Louis outbreak, and interpreted by them as incriminating certain Culex mosquitoes. Several species of Aedes, Culex and Theobaldia were found in the region, as was also Anopheles maculipennis.

Only traces of rainfall occur during any summer, and the summers of 1939 and 1940 were not exceptions; no fluctuation in the amount of water for irrigation used in any district (hydrographs were available for study) occurred from early spring till after the decline in the epidemic. Neither is it customary in the district most heavily involved (orchards) for the water to be shifted from one crop to another during this period. No unusual flooding or stagnation can be accounted for.

The blood serum of several wild and domestic birds and mammals was tested for the presence of antibodies to one or both of the viruses and some tests were positive. The details and implications of these findings on the epidemiology of the disease have been discussed in the paper, previously referred to,[1] covering epidemiologic aspects.

It was arranged that the physicians of the county should report each case of suspected encephalitis to the health department by telephone, and cooperation was readily obtained. Also, permission was granted that I should examine each patient and take a detailed history. As far as possible, therefore, each person was visited while ill and given a careful physical examination, usually on the day of reporting. Subsequent visits were made for follow-up notes at frequent intervals, where possible. An epidemiologic and clinical form including one hundred and sixty different items was filled out

TABLE 3.—*Duration of Hospitalization in Weeks*

Time, Weeks	Number of Patients
<1	20
1-2	6
2-3	6
3-4	2
4-5	1
>5	1
Unknown	3
Total	39

6. Hammon, W. M.: Unpublished data.

7. Report on the St. Louis Outbreak of Encephalitis, Prepared by Direction of the Surgeon-General, Public Health Bulletin 214, United States Treasury Department, Public Health Service, 1935.

8. Feemster, R. F.: Outbreak of Encephalitis in Man Due to the Eastern Virus of Equine Encephalomyelitis, Am. J. Pub. Health **28**: 1403 (Dec.) 1938.

9. Leake, J. P.; Musson, E. K., and Chope, H. D.: Epidemiology of Epidemic Encephalitis, St. Louis Type, J. A. M. A. **103**: 728 (Sept. 8) 1934.

10. Jones, A. B., and Bozalis, G. S.: 1937 St. Louis Epidemic of Encephalitis: Follow-Up Studies, J. Missouri M. A. **37**: 5 (Jan.) 1940.

from data obtained from the patient, the family and friends and from the physician's and the hospital's record. This usually required more than one visit, and whenever possible the same questions were asked of several different persons as a check on accuracy. Later the data were coded and transferred to punch cards for analysis.

TABLE 4.—*Symptoms and Physical Signs in Order of Increasing Frequency*

Symptom or Physical Sign	Times Noted	Total Number with Data Recorded	Percentage of Times Noted
Deafness	0	45	0
Urinary retention	1	49	2.1
Strabismus	2	53	3.8
Tinnitus	3	50	6.0
Paralysis	4	54	7.4
Nystagmus	4	51	7.8
Convulsions	6	53	11.3
Diarrhea	7	55	12.7
Herpes	7	52	13.5
Amblyopia	7	51	13.7
Aphasia	7	50	14.0
Sore throat	9	55	16.4
Cough	10	56	17.9
Coryza	13	55	23.6
Rigor	13	52	25.0
Dysarthria	12	47	25.5
Diplopia	13	48	27.1
Irritability	18	56	32.2
Myalgia	13	40	32.5
Constipation	19	52	36.5
Urinary incontinence (only once unassociated with coma)	20	54	37.1
Coma	22	57	38.6
Chilly sensations	21	52	40.4
Photophobia	28	54	51.8
Restlessness	29	55	52.7
Sweats	28	49	57.2
Vomiting	34	57	59.7
Tremor	30	48	62.5
Arthralgia	34	53	64.2
Nausea	38	57	66.7
Mental confusion or delirium	37	55	67.3
Vertigo	38	49	77.6
Abdominal pain	23	27	85.3
Drowsiness	53	57	93.0
Headache	53	53	100.0
General malaise	52	52	100.0

CLINICAL ASPECTS

Hospitalization.—Thirty-nine of the patients were hospitalized, most of them in the two hospitals in or near the city of Yakima. Table 3 shows the length of hospitalization in each case. It must be interpreted with caution relative to severity of illness or length of disability, because in the private hospital some patients were discharged when not fully recovered, because of the cost of hospitalization. At the county hospital, to which the transient laborers were taken, they were kept for a much longer period, for these could not provide for themselves until able to work.

Symptoms and Physical Signs.—Unfortunately, neither institution had a resident intern, and records in both, as kept by the attending physician, were frequently inadequate and occasionally lacked notes—both on physical examination at admission and on progress. Many of the data available, therefore, were recorded on visits made by me. Daily visits to some patients were impossible to make, and late arrival (August 24) prevented me from seeing a few patients at all. Some data were obtained from nursing notes, which were of the usual excellent quality. Since daily examinations could not be made in all cases, a negative record, as far as changes in reflexes and other signs of a temporary and fleeting nature which patient, nurse or friend could not be expected to observe, means nothing, and no analysis of such record is attempted. Such findings as gross tremors, rigors, nystagmus and strabismus were probably reliably noted by others when in close attendance, and when it was felt that information of such a nature obtained from lay sources or from nurses was dependable it was recorded.

The symptoms and signs observed were remarkably similar to those described as occurring in the St. Louis epidemic.[7] In table 4 are listed those on which reasonably accurate data were obtained. The onset in most cases was sudden, without more than a few hours of prodromal symptoms, but some patients had from one day to two weeks of mild headache or malaise preceding the onset of severe symptoms. Because of the indefiniteness of the prodromal symptoms when present and the relatively few cases in which they lasted more than twelve hours, in all cases discussed in this report the onset was considered as occurring at the time of definite severe headache, fever and malaise. The influenza-like or griplike symptoms associated with onset and occurring during the first few days of disease were striking. Myalgia and arthralgia frequently were severe. Abdominal pain, a frequent early symptom or prodromal symptom (in 85 per cent of cases), seemed occasionally to be due to extreme tenderness of the abdominal muscles. Photophobia was frequently an early feature (in 52 per cent) and was of considerable aid at times in differential diagnosis. Coarse tremors (of tongue, chin and hands), lethargy and coma were late manifestations, but the complete picture not infrequently developed within three days from the first symptom. Convulsions and violent restlessness or mania were infrequent manifestations. Coma was seldom complete, for the patient could almost always be roused to consciousness and would at least attempt some response. Abdominal reflexes were almost always completely absent in adults but in children were more frequently present, though diminished. Since few children were affected and in most of these the disease was mild, the picture generally encountered in both the Eastern and the Western equine disease was not observed except in 1 Japanese girl aged 2 years, who was first seen by a physician and hospitalized a few hours before death.

One feature which has not come to my attention in other descriptions is a rather distinctive, most unusually malodorous perspiration which was excreted by a large percentage of patients. The patients themselves frequently complained severely of this, and in several instances it continued for a week or longer during convalescence. Several wives of patients cared for at home complained that the perspiration left a yellow stain in the bedding that was difficult to remove.

Clinical jaundice was noticed after the first eight to ten days of illness in several cases, and an increased icterus index was an almost universal finding. All samples of serum were separated from the clot within a few hours after being taken, and it was noted daily that the serum of most patients could readily be distinguished from that of contacts and other controls by its icteric tint. Since no anemia was noted in any patient for whom counts were made, no hemolysis was suspected, so this icterus index assumes significance. No quantitative or qualitative chemical tests were made.

Temperature.—In table 5 are presented the maximum temperatures encountered in the 38 cases in which records were available over a period during which the maximum would be expected, usually between the second and the sixth day of illness.

Spinal Fluid.—Lumbar puncture was performed at some time during the acute stage of the disease on 37 patients and on 6 persons was repeated at least once. Records were obtained of 42 total cell counts and of 35 differential counts. These are shown in table 6 by numbers of cells, by the polymorphonuclear-

mononuclear ratio and by the number of days after onset when taken. Most of these were done by one laboratory, and the methods used were such that the results may be accepted as accurate. Analysis shows that in all instances counts above 10 cells per cubic millimeter were obtained, that only 2 counts were above 1,000 and that in most cases the count was between 100 and 300 cells. The polymorphonuclear-mononuclear ratio appears to be independent of the total cell count, but during the second and third day of the disease the polymorphonuclears predominated (6 of 7 counts), and after this the ratio tended to be reversed (6 of 18 on the fourth and fifth days and 0 of 5 counts on the sixth and seventh days). The counts taken on the eighth day and later were more irregular in this regard, but it was the unusual type of case in which puncture was called for as late as the eighth day or after.

These data differ somewhat, and probably to a significant degree, from those recorded in the St. Louis outbreak of 1933.[7] Counts of from 40 to 80 cells were most frequently encountered (25.6 per cent of all), and counts from 120 to 500 represented only 29 per cent of that group in contrast to 48 per cent in the Yakima series. In the St. Louis epidemic a predominance of polymorphonuclear cells was seldom encountered, and in the average instance 80 per cent to 90 per cent of the cells were of the mononuclear type. When the puncture was made early in the course of the disease, as noted previously, the reverse was usually found in the Yakima cases, and in only a few samples of spinal fluid were as many as 80 per cent to 90 per cent of mononuclear cells encountered. Both the total cell count and the differential count, then, would seem to reflect the influence of the equine virus, for which these findings are more typical.

The globulin content and pressure were in most cases found slightly increased, and the sugar content, when measured, was normal or slightly increased. No organisms were found on smear or culture. No colloidal gold curves were determined, and few Wassermann tests were performed.

Leukocytes.—Only 17 white cell counts were made, and in only a few of these was the differential count recorded. Analysis of these by days showed no significant change in pattern at any time, perhaps because of the size of the sample. Only 1 count below 5,000 cells per cubic millimeter was encountered, 3 were between 5,000 and 10,000 and 13 were over 10,000,

TABLE 5.—*Maximum Recorded Temperatures*

Maximum Temperature, F.	Number of Patients	Percentage of Patients
105-105.9	4	10.5
104-104.9	12	31.6
103-103.9	10	26.4
102-102.9	8	21.0
101-101.9	4	10.5
100-100.9	0	0.0
Total	38	100.0

with only 4 of these above 20,000. In general, there was a slight increase in the proportion of polymorphonuclear cells with a slight shift to the left in the Schilling count.

Mild Form.—The occurrence of several cases of a mild, atypical form deserves particular attention, for in these the physicians were hesitant about making a diagnosis of encephalitis until reports on the blood serum indicated neutralization of the equine virus. In a few instances in which antibodies for the St. Louis virus alone were encountered, no final diagnosis was made because of the great possibility that the patient might have developed the antibodies at an earlier date. The records of 2 cases of mild involvement are here presented.

TABLE 6.—*Spinal Fluid Cell Counts by Total Number of Cells, by Polymorphonuclear-Mononuclear Ratio and by Day of Disease When Taken*

Total Cell Count	Polymorphonuclear-Mononuclear Ratio	Day When Taken				Total by P-M Ratio	Total by Total Count
		2-3	4-5	6-7	8+		
1-9	P > M	0	0	0	0	0	0
	P < M	0	0	0	0	0	
10-19	P > M	0	0*(1)	0	0*(1)	0*(2)	3
	P < M	0	1	0	0	1	
20-49	P > M	2	0	0	0	2	7
	P < M	1	2	1	1	5	
50-99	P > M	0	2	0	1	3	8
	P < M	0	3	1	1	5	
100-299	P > M	2	2 (1)	0 (2)	2	6 (3)	15
	P < M	0	4	2	0	6	
300-499	P > M	1	1	0 (1)	0	2 (1)	5
	P < M	0	1	1	0	2	
500-999	P > M	1	0	0 (1)	0	1 (1)	2
	P < M	0	0	0	0	0	
1,000+	P > M	0	1	0	0	1	2
	P < M	0	1	0	0	1	
Total	P > M	6	6 (2)	0 (4)	3 (1)	15 (7)	42
	P < M	1	12	5	2	20	

* ( ) Differential count not made.

REPORT OF CASES

CASE 1.—H. A., a boy aged 15, who lived in the midst of orchards about 9 miles (14.5 kilometers) southwest of Yakima, had worked in an orchard, thinning, spraying and picking all summer. On August 29 he complained of headache, malaise with arthralgia, slight sore throat and abdominal pain and showed no appetite. Toward evening his temperature was found to be 102.5 F. A physician was called, and he reported finding stiffness of the neck and questionable stiffness of the back, moderate redness of the throat, congestion of the nasal mucous membranes and a cough. No abnormal neurologic responses were obtained, but because of the headache and definite stiffness of the neck a diagnosis of encephalitis was considered. Sulfathiazole was given in a 2 Gm. dose, and instructions were given to take 3 Gm. on each of the following days until improvement was noted. The following day the temperature had fallen to 100 F., but other signs and symptoms remained the same. Still no lumbar puncture was made. On the third day the temperature was 99 F. and definite improvement had occurred. The diagnosis infection of the upper part of the respiratory tract was then considered more reasonable, and the boy was allowed up on the fifth day, apparently well. Blood was taken on the fifteenth day after onset and neutralizing antibodies found for both the St. Louis and the Western equine virus.

CASE 2.—Mrs. C. S., aged 59, lived in Yakima near the city limits. On September 9 she suddenly suffered a severe occipital headache, accompanied by malaise, arthralgia, restlessness, photophobia and abdominal tenderness and pain. She felt feverish and went to bed. The following day she felt worse and believed her temperature to have been high. On the third day she noted stiffness of the neck and back, vomited several times and then was seen by a physician, who ordered hospitalization when he discovered nuchal rigidity. He prescribed 15 grains (0.97 Gm.) of sulfapyridine every four hours. A lumbar puncture gave no evidence of increased pressure, but 215 leukocytes per cubic millimeter were found, of which 12 per cent were lymphocytes and 88 per cent polymorphonuclear cells. There was a slight increase in globulin. The temperature was 101.4 F. The white cell count was 9,150, with 78 per cent polymorphonuclear cells and 21 per cent lymphocytes. The

following day the maximum temperature was 99.4 F. Physical examination revealed no evidence of infection of the upper part of the respiratory tract. The patient was alert and cooperative and, except for nausea (probably due to sulfapyridine), had no complaints. Slight conjunctivitis was noted, also tenderness of the abdominal muscles. There was slight stiffness of the neck and none of the back. Abdominal reflexes were absent, but no other abnormal neurologic conditions were noted. Lumbar puncture was performed and a normal pressure found, with clear fluid containing 77 cells per cubic millimeter, 51 per cent lymphocytes and 49 per cent polymorphonuclear cells. A trace of globulin was noted. Blood taken at that time neutralized the Western equine virus but not the St. Louis virus. Recovery was rapid, and within a few days the patient was discharged. At no time had she been irritable, drowsy or comatose.

Undoubtedly more cases of mild involvement occurred, but the diagnosis of encephalitis was not seriously entertained by patient or physician because of the atypical course of the illness. Fothergill [11] found no evidence of atypical or missed attacks in his serum neutralization survey of contacts in the Massachusetts outbreak due to the Eastern equine virus, but Buss and Howitt [4] in Kern County, Calif., found a number of contacts, whose illness was not diagnosed as encephalitis, to have antibodies for the Western virus.

Incubation Period.—Some evidence was available regarding the incubation period of the disease in the history of persons who entered the valley shortly before the onset of their symptoms. Two patients had symptoms just seven days and another eight days after entering the valley from regions where encephalitis was not known to occur. Another entered the valley eleven days before the onset of symptoms but did not enter the section where the disease was most prevalent until the eighth day before onset. Another entered twenty-eight days before the onset of the disease. Only 1 person was known to have left the valley and contracted the disease elsewhere, but since an interval of only two days had elapsed it is probable that the infection had been acquired several days before the patient left. The group of 4 patients who showed symptoms within seven to eleven days after entering the region included 2 persons whose serum neutralized both viruses and 1 each whose serum neutralized only the equine or the St. Louis type. This would indicate that the incubation period for both diseases might be as short as or shorter than seven days. This is less than the usually accepted average incubation period for the St. Louis disease but represents almost the only evidence available for the length of the incubation period in the naturally acquired Western equine disease in man.

TREATMENT

In all cases treatment was largely symptomatic. Lumbar puncture frequently gave marked relief of the headache. One patient, aged 57, who had a prolonged illness of unusual severity was given two transfusions of blood from a person who had recovered from encephalitis earlier in the epidemic. She also was treated with sulfapyridine and eventually recovered completely. An early and a late examination of the blood of this patient showed that an increase of titer for the Western equine virus had developed between the eighth day and the fourth month.

Except for the earliest cases, either sulfanilamide or one of its related compounds was used in treatment in nearly all. An analysis of all fatal cases showed that in only 1 was the patient treated early or with adequate doses with one of these drugs. This patient possibly died as a result of the treatment, for after apparent recovery, under continued therapy with sulfanilamide in doses of 40 grains (2.5 Gm.) a day, an elevation of temperature occurred on the twelfth day accompanied by a rash, and two days later death occurred. No blood counts were made. A similar analysis of drug therapy for the persons recovering revealed that few of these had received amounts of the drug within the minimum of the generally accepted therapeutic range. Therefore, although the physicians all felt that the drug was a useful therapeutic agent, no good evidence for such a conclusion is available. I feel that further trial of these drugs under controlled conditions and with a proper regard for their side reactions is warranted.

I would not recommend the use in any outbreak of Western equine encephalitis of the treatment recommended recently by Zichis and Shaughnessy [12] and based on their experiments with specific hyperimmune rabbit serum in guinea pigs. Howitt,[13] as early as 1932, similarly showed the effectiveness of immune serum in the Western equine disease in guinea pigs if given early enough, but when given later it was ineffective. Doses calculated by weight in man comparable to those used by Zichis and Shaughnessy [12] in guinea pigs would require that several liters of hyperimmune rabbit serum be given an average man before a definite diagnosis of encephalitis of any kind could be made (at the first elevation of temperature or sign of disease). It was shown previously that at a time when a clinical diagnosis can be made, antibodies in large amount are already present in the blood of many patients (blood was drawn from many of the patients as soon as the physician in charge felt reasonably certain of the diagnosis, and in all cases but 1 in which the blood eventually neutralized the equine virus it did so to the maximum titer employed in the test on the first sample drawn), so the administration of additional serum could be expected to be of little or no value. Many disadvantages can be conceived in the early use of large amounts of any heterologous serum in the treatment of a disease presenting so many difficulties in differential diagnosis. Such difficulties were encountered by physicians and epidemiologists in Tacoma during the summer of 1940 when attempts were made to treat poliomyelitis with antistreptococcus horse serum. Serum reactions, frequently severe, not only were alarming to patient, family and physician but simulated many clinical features of the disease. Furthermore, in mixed epidemics such as that in Yakima, which I feel probably have occurred and will occur elsewhere, or in sporadic cases of encephalitis, it is impossible to make a specific etiologic diagnosis by any means now available in time to be justified in administering specific serum as Zichis and Shaughnessy would have physicians do.

Since no therapeutic control measures are available at present and the age distribution, geographic distribution and epidemiologic features of these two encephalitides make them of special concern at present to military camps, it is even more important to consider what prophylactic measures are available. Formaldehyde-

11. Fothergill, L. D.: Equine Encephalomyelitis. Virus and Rickettsial Diseases with Especial Consideration of Their Public Health Significance: A Symposium, Cambridge, Mass., Harvard University Press, 1940.

12. Zichis, J., and Shaughnessy, H. J.: Experimental Western Equine Encephalomyelitis, J. A. M. A. **115**: 1071 (Sept. 28) 1940.

13. Howitt, B. F.: Equine Encephalomyelitis, J. Infect. Dis. **51**: 493 (Dec.) 1932.

treated vaccines for the equine viruses have been found effective in horses and laboratory animals and have been tried on human beings, but although mice may be protected against the St. Louis virus with similarly prepared formaldehyde-treated virus suspensions, to my knowledge these have not been tested in man. However, once an epidemic begins and the etiologic agent is definitely identified in a laboratory equipped for work with viruses, the time for effective use of a vaccine probably will have passed. It is of utmost importance, therefore, to determine for both viruses the exact means of transmission and the reservoir hosts in nature, in order that environmental control measures may be established.

CONCLUSIONS

1. An outbreak of encephalitis which occurred in the Yakima valley in 1940 involved both horses and man.

2. A diagnosis of encephalitis type B was definitely established in 58 of 86 reported cases, making a morbidity rate of 62.7 per 100,000 for the county of Yakima excluding the city of Yakima, and of 44.1 for that city.

3. The mean age of patients was 45.7, the median 51 and the range 2 to 80. The rate increased progressively with age. Eighty-one per cent of the patients were males.

4. The case fatality rate was 22.4 per cent (13 deaths).

5. Neutralization tests performed on the blood serum of 50 patients with a definitely established diagnosis showed a total of 86 per cent neutralizing the Western equine virus, 72 per cent the St. Louis virus and 56 per cent both. Seventy-five comparable control samples of serum showed neutralizing antibodies for the equine virus in 6.7 per cent, for the St. Louis virus in 28 per cent and for both in 2.7 per cent.

6. An increase in titer between an early and a late blood sample was noted once for each virus.

7. Clinical, epidemiologic and laboratory evidence all indicated the presence of both viruses, and it appears probable that some patients had mixed infections.

8. The blood serum of certain mammals and birds from the region showed neutralizing antibodies to one or both of these viruses.

9. The course of the illness in adults was similar to that described for the St. Louis disease. The frequency of occurrence of thirty-six symptoms and physical signs is shown in table 4.

10. Analysis of the data on 42 samples of spinal fluid shows that during the second and third day of illness a predominance of polymorphonuclear cells is usually encountered; after the third day the mononuclear cells predominate. More than 50 per cent of the total cell counts were between 50 and 300 cells per cubic millimeter.

11. Some mild attacks occurred which, without lumbar puncture or the neutralization test, would have been diagnosed as grip or infection of the upper part of the respiratory tract.

12. The incubation time in man for either virus may be as short as seven days.

13. Although many patients were treated with drugs of the sulfonamide group, no definite evidence of the effectiveness of these drugs was obtained.

14. Serum therapy with hyperimmune rabbit serum should not be attempted for the Western equine disease.

The Medical Center.

EXTRARECTAL MASSES CAUSED BY TUMORS OF THE RECTO-UTERINE OR RECTOVESICAL SPACE

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An extrarectal mass in the recto-uterine or recto-vesical space is encountered frequently in the course of routine digital examination of the rectum. The significance of the mass seldom is recognized, and it is sometimes confused with primary carcinoma of the rectum. Because of the prognostic and diagnostic importance of extrarectal tumors, digital and proctoscopic examination should not be omitted in cases of obscure abdominal disease.

In 1895, Strauss,[1] discussing some cases of operative carcinoma of the stomach, stated: "Carcinomatous metastases in the liver were found at operation in this case, also in the retroperitoneal tissue, and in Douglas' pouch. The latter situation we have found repeatedly as a site of metastases in carcinoma of the stomach and which on account of its accessibility to digital exploration merits more frequent attention during examination." This is the first mention that we have found in the literature of malignant growths in the pelvis secondary to primary gastric carcinoma; the importance of these growths was overlooked for fourteen years, until Blumer's [2] description in 1909. Since then "Blumer's shelf" has been mentioned frequently (figs. 1, 2 and 3). According to Blumer's original article, the finding of a shelf does not necessarily imply the presence of a metastatic or implanted malignant growth, but it can be and frequently is the result of an inflammatory process. Blumer stated that in his experience a shelf caused by an inflammatory process usually was incomplete or one sided. In 1835, Sym [3] reported finding a tumor which projected into the rectum anteriorly, preventing irrigations. At necropsy the tumor was found to be the result of tuberculous peritonitis.

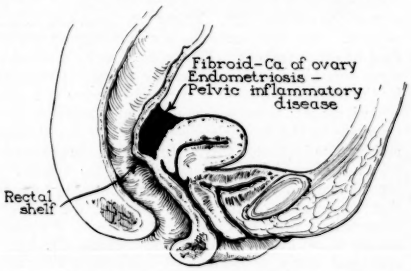

Fig. 1.—Sagittal section of female pelvis, with an implanted lesion in the recto-uterine space productive of a rectal shelf.

From the Section on Proctology of the Mayo Clinic.

1. Strauss, Hermann: Zur genaueren Kenntniss und Würdigung einer im milchsäurehaltigen Magensaft Massenhaft vorkommenden Bakterienart, Ztschr. f. klin. Med. **28:** 578-585, 1895.

2. Blumer, George: The Rectal Shelf: A Neglected Rectal Sign of Value in the Diagnosis and Prognosis of Obscure Malignant and Inflammatory Disease Within the Abdomen, Albany M. Ann. **30:** 361-366 (May) 1909.

3. Sym, cited by Blumer.[2]

Many of the patients in our series came to the Mayo Clinic primarily because of rectal trouble, and the finding of an extrarectal mass on routine digital or proctoscopic examination was the first sign to direct attention to the primary source of the trouble.

Our study comprised a detailed investigation of 254 consecutive cases of malignant tumor of the recto-uterine or rectovesical space, in which the masses were found on examination. The patients were studied in order to determine what produced the mass, as decided by clinical, roentgenologic, surgical or postmortem examination. Of the patients 138 (54.3 per cent) were women and 116 (45.7 per cent) were men. The predominance of women is explained readily by the fact that women are more likely to have pelvic tumors than are men.

We have grouped the extrarectal masses under seven classifications, and the results of our study will be reported in accordance with this classification.

RESULTS

Pelvic Implants from Growths in the Upper Part of the Abdomen and Pelvic Metastatic Growths.—These conditions were represented by 42 patients, or 16.6 per cent of the series of 254. Thirty were men and 12 were women. This distribution by sex is in keeping with the data of other authors. The relative rarity with which these conditions are found among women is explained by the mode of invasion of the recto-uterine and recto-vesical spaces; that is, fragments of malignant tissue gravitate to the most dependent part of the abdomen and become implanted there. In women, the gravitating cells are stopped by and engrafted on the ovaries. A second reason for the disproportion according to sex is that carcinomas of the upper part of the abdomen (especially gastric carcinomas) occur more frequently among men than among women (table 1). In a statistical study of some 600 patients with gastric carcinoma, Abrahamson and Hinton [4] gave the ratio as 3 men to 1 woman.

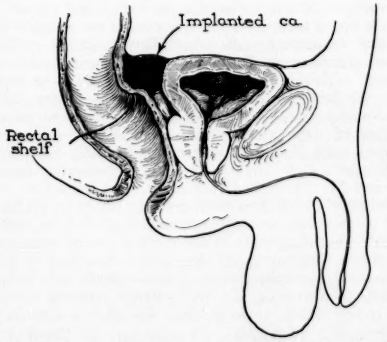

Fig. 2.—Sagittal section of male pelvis. The rectovesical space, which contains an implanted lesion productive of a rectal shelf, is represented.

Each of 8 patients in this group of 42 had first consulted a physician because of symptoms resulting from the metastatic pelvic growth rather than because of symptoms which were referable to the primary growth. Four of the 8 had been referred to the clinic with a diagnosis of primary carcinoma of the rectum.

Proctoscopic examinations were carried out in all 42 cases; in none of them did the secondary malignant growth involve the rectal mucosa. Cases have been reported in which the process had infiltrated the rectal wall; in such instances, the resultant proliferative changes can be confused readily with primary rectal carcinoma.

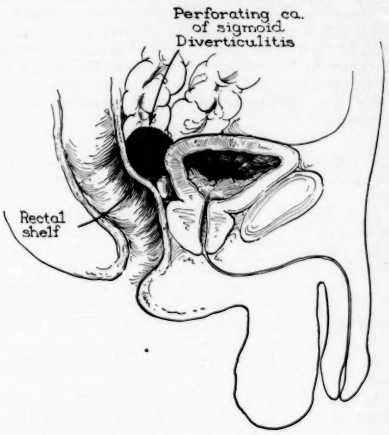

Fig. 3.—Manner in which a lesion in a redundant loop of the intestine may become fixed in the pelvis and produce a rectal shelf.

Two of the 42 extrarectal masses occurred in women whose primary growth had been in the breast. The manner in which the pelvic implant occurred is worth noting. A fairly common early site of metastasis from carcinoma of the breast is the liver; it is possible that some of the cells gravitate from there. Bacon has emphasized that some authors still maintain that these pelvic metastatic growths are the result of carcinomatous emboli and therefore occur by way of the blood stream.

Lesions of the Colon and Small Intestine Causing Extrarectal Masses.—There were 58 patients in the group with this condition, or 22.8 per cent of the entire 254. Thirty-three were men and 25 were women (table 2).

All carcinomas of the sigmoid flexure were perforating and had induced an inflammatory reaction, thus causing a fixed pelvic mass. In 1 instance the primary carcinoma was in a redundant loop of the sigmoid flexure, which had become perforated and adherent in the rectovesical space, with secondary invasion of the rectum. It had caused a proliferative growth in the rectum, and, on proctoscopic examination, the lesion was considered to be a primary rectal carcinoma; at biopsy it was graded 2.

Three of the 58 patients had carcinoma of the cecum and the right portion of the colon. All these patients had a long mesentery present, and the lesion had become fixed and adherent in the pelvis.

Twenty-six of the 58 patients had diverticulitis of the sigmoid flexure which had produced perisigmoiditis and

4. Abrahamson, R. H., and Hinton, J. W.: Carcinoma of the Stomach: Review of Four Hundred and Forty-Four Cases to Emphasize the Inadequacy of Present Methods for an Early Diagnosis, Surg., Gynec. & Obst. **71**: 135-141 (Aug.) 1940.

a pelvic inflammatory reaction which, in turn, had given rise to an extrarectal mass.

One of the fairly common signs in regional ileitis is the finding of a pelvic mass on digital or proctoscopic examination; this occurred in 3 of the 58 instances. At operation an involved loop of ileum was found adherent in the most dependent part of the pelvis.

Lesions of the Genitourinary System.—Blumer reported the case of a woman suffering from epithelioma of the uterine cervix who had a rectal shelf. He also mentioned the possible occurrence of similar conditions among men who had malignant lesions of the genitourinary system. In our series there were 107 patients, or 42.1 per cent of the entire 254, who had pelvic masses which had resulted from lesions of the genitourinary system. Eighty-six were women and 21 were men. Ultimate diagnoses are recorded in tables 3 and 4. Malignant lesions predominated among the men and inflammatory lesions among the women.

The chief complaint of 56, or more than half of the 107 patients, was of symptoms referable to the rectum or to the lower portion of the intestine. The most common rectal complaint was "high rectal pain." Others complained of change of bowel habits or a sensation of fulness in the rectum.

Chemical Tumors.—Treatment by injection for hemorrhoids had produced extrarectal masses in 3 of the 254 patients (1 woman and 2 men). Two lesions were diagnosed at biopsy. All 3 patients complained of constipation, rectal pain or diarrhea.

Retroperitoneal Tumors.—In this division of the 254 patients were 6 patients, all men, 4 of whom had retroperitoneal sarcomas and 2 lymphosarcomas. Two complained of change of bowel habits.

Abdominal Carcinomatosis.—This division of the 254 patients consisted of 21 in whom the primary

TABLE 1.—*Distribution by Sex and Location of Primary Lesion in Forty-Two Cases of Implanted or Metastatic Tumor of the Recto-Uterine or Rectovesical Space*

	Site of Origin					
	Carcinoma of Stomach	Carcinoma of Pancreas	Carcinoma of Breast	Giant Cell Tumor of Bone	Lymphosarcoma	Total
Men	24	6	..	..	..	30
Women	6	..	2	2	2	12

TABLE 2.—*Distribution by Sex and Location of Primary Lesion in Fifty-Eight Cases in Which Lesions of the Small Intestine Caused Extrarectal Masses*

	Site of Origin				
	Carcinoma of Sigmoid Flexure	Carcinoma of Right Colon	Diverticulitis	Regional Ileitis	Total
Men	14	3	15	1	33
Women	12	0	11	2	25

source of carcinoma was not discovered. Eight (38 per cent) of the patients were women and 13 (62 per cent) were men. All of the patients were in the fifth to the seventh decade of life. Twelve (57 per cent) of the patients made complaints referable to the rectum or the colon, as manifested by bleeding or a change of bowel habit, such as diarrhea, constipation or alternate diarrhea and constipation.

The diagnosis was established in 10 of the 21 cases (48 per cent) by clinical examination alone, in 1 case (5 per cent) by means of peritoneoscopy and in the remaining 10 cases (47.6 per cent) by abdominal exploration.

TABLE 3.—*Lesions of the Genitourinary System Which Caused Extrarectal Masses Among Women*

Malignant Lesions	Patients	Inflammatory or Benign Lesions	Patients
Carcinoma of the ovary	14	Dermoid of ovary	2
Carcinoma of the cervix	8	Cyst of ovary	3
Carcinoma of the uterus	5	Endometriosis and adenomyosis	30
Carcinoma of the rectovaginal septum	1	Pelvic inflammatory disease	22
		Hydrosalpinx	1
Total	28	Total	58

TABLE 4.—*Lesions of Genitourinary System Which Caused Extrarectal Masses Among Men*

Malignant Lesions	Patients	Inflammatory or Benign Lesions	Patients
Sarcoma of rectovesical septum	1	Rectovesical fistula	1
Carcinoma of prostate	13	Hypertrophied prostate	1
Epithelioma of bladder	2	Prostatic abscess	2
Carcinoma of seminal vesicle	1		
Total	17	Total	4

Miscellaneous.—This group consisted of 17 patients, or 6.7 per cent of the series of 254; 6 were women and 11 were men. Among the women extrarectal masses were found to be caused by uterine retroversion. Three of the 11 men had had ruptured appendixes, 4 had had perforated peptic ulcers and the remaining 4 had undergone abdominal operations. Probably all of them had had pelvic peritonitis with sufficient residuums to produce extrarectal masses.

SUMMARY

Two hundred and fifty-four patients with extrarectal masses were examined in five years. They were studied with the idea of determining the cause of the mass and whether the symptoms were referable particularly to the lower portion of the colon. Of the patients, 138 (54.3 per cent) were women and 116 (45.7 per cent) were men. The patients were divided into seven groups on the basis of the primary source of the lesion. There were 135 patients (53.1 per cent) whose complaints were referable particularly to the rectum or the colon. Four had been referred to the clinic with a diagnosis of primary carcinoma of the rectum.

CONCLUSIONS

1. Our study, therefore, indicates that conditions which produce an extrarectal mass frequently will cause complaints directly referable to the rectum and will be responsible for the patient's first consultation with a physician.

2. When a rectal mass is palpated, proctoscopic examination should be done to determine whether the mass is intrarectal or extrarectal.

3. Our study indicates that the most common causes of extrarectal masses among women are lesions of the genital system. The most common causes of extrarectal masses among men are lesions of the gastrointestinal tract.

HAEMOPHILUS INFLUENZAE TYPE B IN ACUTE LARYNGITIS WITH BACTEREMIA

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Pittman[1] in 1931 demonstrated that the invasive strains of Haemophilus influenzae, in contradistinction to the strains ordinarily found in the nasopharynx, possess a capsule. The capsule contains a soluble substance which reacts with the homologous immune serum, and on the basis of this reaction six serologic types of H. influenzae (A through F) have been described. Of the organisms recovered in cases of influenzal meningitis, 92 to 95 per cent[2] have been type B. Recovery of type B organisms from sources other than the meninges has been unusual.

The purpose of this communication is to describe 10 instances in which H. influenzae type B was found in cultures of the blood taken from patients desperately ill with acute laryngitis. Special interest attaches to the fact that 8 of these cases occurred within the fifteen month period from Jan. 1, 1940 to April 1, 1941, whereas the other 2 were the only ones observed in this clinic during the preceding seven years. Of further interest is the constant clinical picture of high fever, shock and acute laryngitis observed in these cases. A similar clinical picture associated with H. influenzae bacteremia has been described in the French literature,[3] but no reference to this type of infection is found in the English literature.

TABLE 1.—*Bacteriologic Data on H. Influenzae Type B Recovered in Ten Cases of Influenzal Laryngitis*

Case	1	2	3	4	5	6	7	8	9	10
Blood										
Ante mortem	0	+	0	+	0	+	+	+	+	+
Post mortem	+	+	+	..	+	..	..	..	..	..
Nasal swab	0	*	*	*	*	*	+	+*	+*	
Pharyngeal swab	0	*	*	*	*	—	*	+	+	
Lung post mortem	+	*	+	..	..	..	..	..	..	..

0 = not done; * = also recovered from nasal swab in rapid typing broth; * = H. influenzae recovered, not typed.

MATERIAL AND METHODS

The clinical material came from the pediatric service of the New Haven Hospital, which is a general hospital in a community of 200,000. The pediatric service is composed of sixty-eight beds, half of them being in the isolation pavilion, to which are admitted all patients whose illness might be considered infectious. Yearly admissions during the period 1933 to 1940 averaged 780 with a progressive increase from about 600 in 1933 to about 1,100 in 1940.

The routine examination of patients admitted to the New Haven Hospital includes bacteriologic studies consisting in cultures of material from the nose and throat, of blood and of material from purulent lesions. Extensive use is made of rabbit's blood in preparing the mediums, and the details of technic are those described by Boisvert.[4]

An additional feature of the routine examination when patients have pneumonia and, more recently, any infection of the respiratory passages or meningitis, is an attempt to make a rapid etiologic diagnosis from material obtained by nasal swab and incubated in 1 cc. of blood broth for a few hours as described by Poole and Fousek.[5]

Identification of H. influenzae was made on the basis of colony formation, stained smears and requirement for X and V factors in growth. Serologic classification was made by the Neufeld technic to demonstrate the presence of capsular swelling, the organisms obtained on culture and therapeutic anti-H. influenzae type B rabbit serum being used.

RESULTS

Data on the recovery of H. influenzae type B in the 10 cases reported are given in table 1.

H. influenzae type B was recovered from the blood culture in all cases. Three patients had no blood for culture taken during life, but cultures of the heart's blood taken post mortem were positive for the organism. One patient had a positive culture both during life and post mortem. The broth cultures grew out in as few as twelve hours in some cases, and in all, within twenty-four hours. Growth in pour plates was characterized by the absence of visible colony formation, but when a loopful of medium was fished from the pour plate to blood broth abundant growth took place. This diffuse distribution of bacteria in the pour plates and the occasional rapidity of growth in the broth blood cultures is indicative of quantitatively heavy bacteremia approaching true sepsis. In no case of acute laryngitis has H. influenzae type B been recovered from other sources and not from the blood culture.

The same organism was recovered from cultures of material from the nose and throat in 2 cases and from the nose in another. In 6 other cases, H. influenzae was recovered from the nose or throat or both but no attempt was made to type the organism. In the last 2 cases H. influenzae type B was recovered within a few hours from a nasal swab placed in rapid-typing broth shortly after the patient had been admitted to the hospital. We have not yet used the means for direct typing suggested by Alexander, Craig, Shirley and Ellis,[6] by which these organisms have been identified from rhinopharyngeal mucus within thirty minutes. The value of this procedure in cases of laryngitis is chiefly in indicating the presence in the upper respiratory passages of an organism rarely encountered there. The application of the same method of rapid culturing in cases of meningitis has proved as successful in giving an early etiologic lead and with this disease may permit the earlier use of the appropriate antiserum.

Cultures of material from the nose and throat on Löffler's medium were negative for diphtheria bacilli in all cases. In no case were hemolytic streptococci recovered from the nose or throat. In 2 cases pneu-

Aided by a grant from the Fluid Research Fund of the Yale University School of Medicine.

From the Department of Pediatrics, Yale University School of Medicine, and the Pediatric Service of the New Haven Hospital and Dispensary.

1. Pittman, M.: Variation and Type Specificity in the Bacterial Species Haemophilus Influenzae, J. Exper. Med. **53**: 471 (April) 1931.

2. Pittman, M.: The Action of Type Specific Haemophilus Influenzae Antiserum, J. Exper. Med. **58**: 683 (Dec.) 1933. Fothergill, L. D., and Chandler, C. A.: Observations on the Dissociation of Meningitis Strains of H. Influenzae, J. Immunol. **31**: 401 (Nov.) 1936.

3. Le Mierre, A.; Meyer, André, and Laplane, R.: Les septicémies à bacille de Pfeiffer, Ann. de méd. **39**: 97 (Feb.) 1936.

4. Boisvert, P. L.: Human Hemolytic Streptococci from Diseases of Children, Am. J. Dis. Child. **59**: 281 (Feb.) 1940.

5. Poole, F. D., and Fousek, Mildred D.: The Etiologic Diagnosis of Pneumonia in Children by Rapid Typing of Nasal Cultures, J. A. M. A. **113**: 1854 (Nov. 18) 1939.

6. Alexander, H. E.; Craig, H. R.; Shirley, R. G., and Ellis, C.: Validity of Etiologic Diagnosis of Pneumonia in Children by Rapid Typing from Nasopharyngeal Mucus, J. Pediat. **18**: 31 (Jan.) 1941.

mococci (type XIX and type XXXIII) were recovered from the nose and throat.

Other sources of material for culture included the tracheotomy wound and the lungs and spleen post mortem. In only 3 cases were cultures made of material from the tracheotomy wound, and in these H. influenzae (not typed) was recovered together with other organisms—staphylococci, Streptococcus viridans and Micrococcus catarrhalis. In 2 cases H. influenzae type B was cultured in material from the lungs at autopsy although there was no gross or microscopic evidence of pneumonia. In another case H. influenzae was recovered from the lungs and in 2 cases from the spleen. Unfortunately, these organisms were not typed.

CLINICAL FEATURES

Incidence.—The incidence of H. influenzae type B infections among patients admitted to the pediatric service of the New Haven Hospital from 1933 to 1940 is given in the accompanying chart. The patients are grouped as to those with influenzal meningitis, those with acute laryngitis and bacteremia and those with some other infection and bacteremia. The number seen in 1940 exceeded the total number seen in the preceding seven years. Interest in the pediatric service in this organism has been greater since January 1940, and this may be a contributing factor in the greater incidence noted during the year 1940. However, the routine practice of taking blood for culture from all patients with evidence of infection and of taking heart's blood for culture from all patients post mortem covers the entire period and would tend to minimize this factor.

Age.—The age incidence is given in table 2. The youngest patient was 4½ months of age and the oldest was 6 years and 10 months. The age was higher than that of the group with influenzal meningitis, of whom about 80 per cent were 2 years old or less, and was more that of children with croup or acute laryngitis.

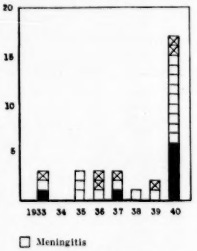
Symptoms and Signs.—The clinical picture was characterized by (1) a history of severe sore throat, (2) evidence of laryngitis, (3) fever and leukocytosis and (4) signs of "shock."

1. History: Only 1 of the patients had a history of previous attacks of laryngitis. Two patients were siblings admitted on successive days; in 2 other cases there was some one in the family group with a cold but no laryngitis. Six of the 10 had a history of colds in the head preceding the onset of respiratory distress. The most striking symptom was severe sore throat, described by 1 child as a "bone in the throat" and by another as "hair in the throat." The sore throat was accompanied by difficulty in swallowing. The progression of respiratory distress was so rapid that all the patients were admitted to the hospital within six to twenty-four hours of the onset.

2. Laryngitis: Evidence of acute laryngitis with obstruction consisted of a hoarse voice, croupy cough, inspiratory retraction of the intercostal, suprasternal and infrasternal spaces and cyanosis. Direct laryngoscopic examination was done in 8 cases, and in all the appearance of the epiglottis and larynx was uniform in showing pronounced edema and redness. This picture of inflammation was described by the laryngoscopist in 1 case as follows: "The epiglottis and both vocal cords and arytenoids resembled strawberries, without ulceration or membrane." In 1 case the epiglottis was so swollen as to prevent any view of the cords or even of the arytenoids. In 4 cases the inflamed and greatly swollen epiglottis was prominent on routine inspection of the throat and must have been the cause of the intense pain and the difficulty in swallowing complained of by the patient. One patient who did not have laryngoscopic examination performed died at home three hours after the onset of symptoms. An autopsy was done at the New Haven Hospital, and according to the pathologist's description the appearance of the larynx was nearly identical with that of patients seen during life. The other patient who did not have a direct laryngoscopic examination performed showed improvement soon after admission to the hospital.

3. Fever and Leukocytosis: The temperature was elevated in all but 1 case. Two patients had a temperature between 38 and 39 C. (100.4 and 102.2 F.), and 7 patients, between 39 and 40 C. (102.2 and 104 F.). The white blood cell count ranged from 44,300 with 95 per cent polymorphonuclear cells to 7,200 with 80 per cent polymorphonuclear cells. Five patients had counts between 15,000 and 20,000. The degree of leukocytosis appeared to have no relation to the severity of the illness or to the outcome.

4. "Shock": The "knocked out" appearance of the patients has been described as shock for want of a better word. This appearance of shock seemed out of all proportion to the relatively short duration of the obstructive symptoms. The patients seemed to lack the ability to fight the obstruction, in contrast to the usual picture in croup. Several observers expressed their surprise at the degree of prostration of the patients by commenting that they did not appear to be trying as hard as they should. After tracheotomy the patients failed to show the immediate improvement which is the usual response to that procedure in cases of obstructive laryngitis. Their respiratory distress was relieved, as evidenced by disappearance of retractions, but they continued to appear prostrated and the temperature remained elevated.



Instances of the detection of H. influenzae type B in blood culture and spinal fluid, 1933 to 1940.

Course and Duration.—One case report is given to illustrate the rapidly progressive course which was characteristic in all the cases. Three patients died within eighteen hours of the onset of severe symptoms and a fourth within forty-eight hours. The patients who recovered showed little change for forty-eight hours except for the relief of respiratory distress. Improvement after this period was rapid, and recovery was complete within a week. In 1 case the tracheotomy tube was not removed until the eleventh day.

REPORT OF CASE

G. S., a white boy aged 3 years, was admitted to the New Haven Hospital on Nov. 25, 1937 because of difficult respirations. There was no illness in the family. The boy had never had croup before. On November 22 the patient had a nasal discharge. The evening before admission he had been irritable. At 5 a. m. on November 25 he complained that his mouth hurt; this was interpreted by the parents as meaning that he

had a toothache. Shortly afterward he began to have respiratory distress which became worse rapidly and was accompanied by cyanosis.

The patient was admitted to the hospital at 10 a. m. The temperature was 39.8 C. (103.6 F.). The boy was having acute respiratory distress with definite retraction of the supraclavicular and intercostal spaces. The skin appeared grayish. There was complete aphonia. The pharynx was dull red, and the tonsils appeared to be slightly enlarged without exudate or membrane. On each side of the neck there were felt several firm lymph nodes which were only slightly enlarged. The heart was not enlarged; there was a soft systolic murmur heard at the apex and not transmitted. The lungs were resonant, and there were no rales. The liver and spleen were not enlarged.

Direct laryngoscopic examination revealed a red, swollen glottis with a small opening. At 11 a. m. tracheotomy was done under local anesthesia. During the operation the patient stopped breathing, and, despite the immediate establishment of an adequate airway through the wound, respirations were not satisfactorily reestablished for five or ten minutes. The temperature rose steadily after the operation to 42 C. (107.6 F.) and, despite constant attempts to reduce it, remained between 40 and 41 C. until death. At 6 p. m. twitchings of the face and extremities began, and these continued despite sedation. The patient died at 8:45 p. m.

At autopsy no membrane was found in the pharynx or larynx. The epiglottis was severely edematous and pulpy, with a light pink color. The vocal cords were swollen so as to obliterate the ventricles between them. The mucosa of the trachea was deep red and pulpy, and the primary bronchi also showed a pulpy mucosa. The anatomic diagnoses were acute laryngotracheobronchitis, pulmonary congestion and edema, focal hemorrhagic pneumonia and necrobiosis of the cerebral cortex.

TABLE 2.—*Age Incidence*

Age, years	0-1	1-2	2-5	5+
Number of patients	1	1	3	5

TABLE 3.—*Treatment and Outcome in Ten Cases of H. Influenzae Type B Laryngitis*

Case	1	2	3	4	5	6	7	8	9	10
Steam tent	—	+	+	+	+	+	+	+	+	+
Tracheotomy	—	+	—	+	+	—	+	+	+	—
Sulfanilamide	—	—	—*	+	—	+	—	—	+	—
Sulfapyridine	—	—	—	+	—	—	+	+	—	+
Sulfathiazole	—	—	—	—	—	—	+	+	+	—
Antiserum	—	—	—	—	—	+	—	—	+	—
Result	D*	D	D	R	D	R	R	R	R	R

D = died; R = recovered; * = patient died at home; † = 20 grains of sulfanilamide given rectally twenty minutes before death.

Bacteriologic findings, as given under case 2 in table 1, included the recovery of H. influenzae type B from a culture of the blood ante mortem and of the heart's blood post mortem. H. influenzae, not typed, was recovered in culture from the nose and throat and at autopsy from the tracheotomy wound, the right lung and the spleen and in pure culture from the heart's blood. In addition, hemolytic streptococci were recovered from the tracheotomy wound and the right lung and Str. viridans from the right lung at autopsy.

TREATMENT

Evaluation of therapy in the cases described is limited by the small number involved, but a discussion of the measures employed seems indicated by the relative frequency of such cases recently. It should be emphasized that all the patients receiving sulfanilamide, sulfapyridine or sulfathiazole therapy recovered, while all those not receiving one of these drugs died. No conclusions could be drawn regarding the relative efficacy of these drugs.

The therapeutic measures employed together with the outcome are given in table 3. Six patients recovered and 4 died, giving a mortality of 40 per cent.

The 9 patients treated in the hospital were placed in a steam tent immediately after admission. This treatment was continued until all signs of laryngitis had disappeared.

Tracheotomy was performed in 6 cases. Four of the patients recovered and 2 died. Of the 4 patients who did not have a tracheotomy, 2 recovered and 2 died. In neither of the latter 2 patients was death considered to be due to laryngeal obstruction. One of the patients had been submitted to laryngoscopic examination, and, while edema and redness of the laryngeal structures was present, it was felt that an adequate airway existed. Tracheotomy was done within two hours of hospitalization in all 6 cases, after a trial in the steam room had not resulted in improvement in the respiratory distress. In 1 case tracheotomy was done in the ward as an emergency, life-saving procedure.

Six patients received chemotherapy with one or more of the drugs of the sulfonamide series, and all these patients recovered. This group included 4 patients who had tracheotomy and 2 who did not. It was felt that patient 3, who received a single dose of 20 grains (1.2 Gm.) of sulfanilamide by rectum one-half hour before death had not received adequate therapy and should be classed as not receiving chemotherapy. Sulfanilamide, sulfapyridine and sulfathiazole were used, 2 patients receiving only one drug and the others two of these drugs given consecutively because of some manifestation of intolerance to the drug given first, e. g. vomiting, rash or delirium. The dose of each of these drugs was calculated on the basis of 1½ grains (0.09 Gm.) per pound of body weight daily. One half of this calculated dose was given as the initial dose, and then one sixth of the daily dose was given at four hour intervals. In 2 cases, the initial dose was given parenterally in the form of a hypodermoclysis of 0.5 per cent sulfapyridine sodium in physiologic solution of sodium chloride. The initial dose in the other cases and subsequent doses in all were given orally. Chemotherapy was started soon after the patient was admitted to the hospital in the last 3 cases when suspicion of bacteremia had been aroused by the clinical appearance of the patient.

Two patients received anti-H. influenzae type B rabbit serum supplied by Dr. H. E. Alexander. One of these patients had meningitis. The other patient remained extremely toxic eighteen hours after tracheotomy and adequate chemotherapy, and 10 cc. of antiserum was administered intravenously. Rapid improvement followed, but a culture of blood taken immediately before administration of the antiserum failed to show any growth, and it is most probable that the patient would have recovered without serotherapy.

SUMMARY

Eight patients with acute laryngitis and H. influenzae type B bacteremia were seen in this clinic between Jan. 1, 1940 and April 1, 1941. A recent increase in H. influenzae type B infections is shown by the fact that 17 cases of infection with this organism were encountered in 1940 in comparison with a total of 15 during the years 1933 to 1939. Speculative interest is aroused as to the possible relationship between this increase in H. influenzae infections and the epidemic form of influenza prevalent in the United States in 1940-1941. In this series of cases no clearcut relation-

ship could be established. Dr. E. V. Turner studied 1 case in the series by the method of Smith, Andrewes and Laidlaw [7] but was unable to isolate a virus.[8]

A review of these 8 cases, together with 2 observed in previous years, reveals a constant clinical picture of severe prostration in addition to the obstructive symptoms of acute laryngitis. The features of this picture were the abrupt appearance of respiratory distress in a previously well child without a history of croup, often accompanied by a complaint of severe sore throat probably due to the greatly swollen epiglottis. High fever, leukocytosis and the appearance of "shock" out of proportion to the duration of symptoms completed the picture. The fulminant course which the disease may run, the short period which it may take blood broth cultures to grow out and the heavy seeding in the pour plate indicate that death may truly be a septic one.

The obstructive symptoms in 6 cases were severe enough to warrant tracheotomy. That relief of the obstruction was not sufficient seems apparent from the fact that 2 patients on whom tracheotomy alone was used died, whereas the 4 patients having sulfonamide therapy in addition to tracheotomy all recovered. Two patients in whom obstructive symptoms were not so severe recovered with chemotherapy alone.

Type specific antiserum, used in the treatment of influenzal meningitis,[9] was administered successfully in 2 cases, in 1 of which signs of meningitis had developed. For patients not responding promptly to tracheotomy and chemotherapy this may be a life-saving measure.

CONCLUSIONS

1. In 10 instances H. influenzae type B was recovered from cultures of the blood of patients with acute laryngitis.

2. The occurrence of H. influenzae type B bacteremia in cases of acute laryngitis produces a septic syndrome adding to the mechanical hazard of that disease.

3. The presence of this organism in the nasopharynx may be detected within a few hours by the use of a nasal swab culture.

4. The use of drugs of the sulfonamide series has proved a valuable means of treatment in addition to the relief of the mechanical obstruction.

5. The use of anti-H. influenzae type B rabbit serum is suggested for patients not responding to tracheotomy and chemotherapy.

789 Howard Avenue.

7. Smith, Wilson; Andrewes, C. H., and Laidlaw, P. P.: Virus Obtained from Influenza Patients, Lancet **2**: 66 (July 8) 1933.
8. Turner, E. V.: Personal communication to the author.
9. Alexander, H. E.: Treatment of Bacterial Meningitis, Bull. New York Acad. Med. **17**: 100 (Feb.) 1941.

Protein as Fuel.—While protein is physiologically rather an uneconomical fuel, it is nevertheless one of the substances out of which the body can get energy by subjecting it to combustion or oxidation. In starvation, after the small reserve store of carbohydrate (glycogen in liver and muscles) has been exhausted and the stores of fat in adipose tissue have been extensively drawn upon, the body will begin to burn tissue protein as a source of energy. Likewise, even when some food is taken, if the supply of carbohydrate and fatty foods is insufficient to provide the needed energy, protein foods or tissues can be used as fuel. As long as the intake of fatty food and carbohydrate-rich foods is plentiful and sufficient to cover the fuel needs, protein will not be burned merely for the purpose of providing energy but can be saved for building tissues if need be. Carbohydrates and fats are hence said to be "protein sparers."—Bogert, L. Jean, and Porter, Mame T.: Dietetics Simplified, New York, Macmillan Company, 1940.

Clinical Notes, Suggestions and New Instruments

LYMPHOSARCOMA: DIAGNOSED GASTROSCOPICALLY

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Sarcomas of the gastrointestinal tract were classified by Ewing [1] as (1) spindle cell myosarcoma, (2) miscellaneous round cell or mixed cell alveolar sarcoma and (3) lymphosarcoma. Lymphosarcoma is the most important type in this classification and is the most frequently seen. The fact that sarcoma seldom involves the gastric mucosa early and therefore produces no characteristic deformity of the stomach on roentgen examination makes early diagnosis difficult. This is particularly unfortunate since the prognosis of gastric lymphosarcoma treated by adequate surgical intervention and follow-up roentgen therapy seems definitely more favorable than that of gastric carcinoma.[2] For these reasons any procedure which may assist in the early diagnosis of this condition should be welcome.

Fig. 1.—Appearance one month before gastroscopic examination. The antrum is well filled.

The following case is of interest because the lesion was diagnosed correctly by gastroscopic examination one month after roentgen examination had failed to disclose the presence of any abnormality of the stomach.

REPORT OF CASE

A man aged 58, a carpenter, presented symptoms strongly suggesting peptic ulcer. He stated that he had midepigastric distress and hunger pains which had begun the previous year. This distress had been relieved by the intake of food, and he had had a remission of symptoms for about one month preceding the onset of his recent recurrence. He had not noticed nausea or vomiting, and there had not been a change in his usual normal bowel activity. Frequently he had been awakened at night with pain, which was relieved by taking an alkaline preparation. There had not been a loss of weight, and he had continued with his usual strenuous work. When free from pain he thought he felt as well in a general way as he previously had. He stated also that he had been a consistent

1. Ewing, James: Neoplastic Diseases, ed. 3, Philadelphia, W. B. Saunders Company, 1928.
2. Balfour, D. C., and McCann, J. C.: Sarcoma of the Stomach, Surg., Gynec. & Obst. **50**: 948-953 (June) 1930.

user of snuff for many years. The past history and inquiry about the system were negative, and there was no history of malignancy in the family. The patient was well nourished, and physical examination disclosed no abnormalities of consequence except for some tenderness in the midepigastrium. No abdominal mass was palpated; the edge of the liver was felt just below the costal margin and was smooth and not

Fig. 2.—Sketch of changes seen gastroscopically. Note grayish lesion in antrum, surrounded by edematous mucous membrane.

tender. Regional lymph nodes were not palpated. The temperature was 98 F., the respiratory rate 20, the pulse rate 70 and the blood pressure 122 systolic and 84 diastolic. Examination of the blood revealed 87 per cent hemoglobin, 4,600,000 erythrocytes and 11,250 leukocytes with 68 per cent polymorphonuclear leukocytes, 27 per cent lymphocytes and 2 per cent monocytes. The Wassermann reaction of the blood was negative. The urine was normal. Gastric analysis, one hour after an Ewald meal, showed 18 degrees of free hydrochloric acid and 25 degrees of combined acid, a total of 43 degrees of hydrochloric acid. The stool specimen showed only a trace of occult blood with the benzidine test. On roentgen examination of the gastrointestinal tract (on June 8, 1938) the esophagus and stomach appeared to be normal, but there was a definite deformity of the duodenal bulb (fig. 1). A repeat fluoroscopic examination was made during which a small fleck was seen indicating the presence of a duodenal ulcer. The impression was that the patient had a small ulcer of the posterior part of the duodenum. Roentgen examination of the gallbladder done at this time disclosed that it was functioning normally. Routine laboratory procedures were repeated; important deviations from the results of the previous examinations were not found.

The patient refused hospital treatment, and a strict ambulatory regimen was planned for him. The first week he seemed to note some improvement, but because the therapeutic response was not what should be expected in a case of uncomplicated duodenal ulcer, he was hospitalized and placed on strict management. He continued to have pain. He was examined with a gastroscope on July 4, and the following notations were made: The pyloric region of the stomach was well visualized. On the anterior wall and the lesser curvature of the antrum was seen a grayish irregular growth (fig. 2). No ulcerations were seen. This nodular grayish infiltration involved part of the angulus. The upper parts of the stomach showed edema and hyperemia but no tumorous infiltration. The impression was that the patient had a malignant growth of the antrum, possibly a lymphosarcoma.

The patient was again given a roentgen examination, following which the conclusion was reached by the roentgenologist that a carcinoma was present in the antrum.

The patient underwent an operation, and the following findings were noted: The lower third of the stomach was involved in a tumorous mass extending down into the duodenum. Several glands were palpated posterior to the stomach, and a mass of palpable tissue of an indurated character was palpated through the opening in the transverse mesocolon—probably the tail of the pancreas. The liver was enlarged and somewhat congested but had perfectly rounded margins. The gallbladder and bile ducts were apparently normal. The head of the pancreas was also apparently normal. Posterior gastroenterostomy was done because of involvement of the duodenum. An indurated lymph node was removed for biopsy.

The biopsy specimen (fig. 3) was examined in the department of pathology of the University of Minnesota and was identified as lymphosarcoma. The postoperative course was without incident, and the patient was subsequently given fifteen treatments of 150 per cent erythema doses of high voltage roentgen therapy. The patient showed considerable improvement; he gained 10 pounds (4.5 Kg.) over a period of two months and continued to feel well until the middle of February 1939, at which time he again complained of midepigastric distress and was given further roentgen therapy. He continued to feel fairly well until about two months before his death, which occurred on June 3, 1940. Permission for postmortem examination was refused by his family.

COMMENT

I had studied a case of lymphosarcoma gastroscopically with Schindler,[3] and because of the remarkable resemblance of the appearance of the infiltration the correct conclusion had been reached that the lesion seen in this case was probably a lymphosarcoma. The following conditions were to be considered in the differential diagnosis in this case: carcinoma, hypertrophic gastritis, hyperplastic noncaseous tuberculosis,

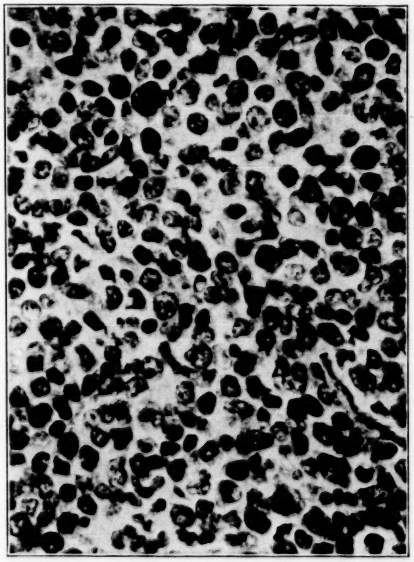

Fig. 3.—Biopsy specimen of omental lymph node, showing lymphoblastomatous cells.

gumma and other granulomatous infiltrations. Generally a carcinoma is ulcerated and presents extensive necrosis with a crater which is filled with blood coagula and has ill defined margins. Carcinoma also generally shows decided changes in color.

3. Schindler, Rudolf: Gastroscopy, Chicago, University of Chicago Press, 1937. Renshaw, J. F.: Lymphoblastoma of the Stomach, J. A. M. A. **107**: 426-428 (Aug. 8) 1936.

Hypertrophic gastritis usually will not present difficulty,[4] but cases have been reported in which benign hypertrophic gastritis simulates a tumor. Generally, however, the hypertrophic condition is not so circumscribed and the "tumor" is not so grayish or "gelatinous" appearing. Gumma does not have distinctive characteristics as seen gastroscopically, but a positive reaction of the blood serum would assist in the diagnosis. Tuberculosis of the stomach has not been observed gastroscopically.

It is of interest to note the similarity of this patient's complaints to those found in cases of peptic ulcer.[6] This is not unusual and has been reported by others. The proximity of the submucous plexus of nerves to the sarcoma is responsible for pain being a prominent feature. This patient did not have nausea or vomiting. Pyloric obstruction [7] is unusual, although the lesion is found most commonly along the lesser curvature of the stomach and in the antrum. Total excision of the lesion followed by high voltage roentgen therapy is the desired goal in treatment.

Review of this case definitely suggests that gastroscopic examination may be of value in the diagnosis of lymphosarcoma if the examiner has the condition in mind. It confirms the fact that gastroscopic examination is indicated in any case in which gastrointestinal complaints persist without satisfactory explanation or without definite diagnosis.

1018 Mills Building.

RECURRENT SCARRING PAINFUL APHTHAE

AMELIORATION WITH SULFATHIAZOLE IN TWO CASES

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A rare but typical form of recurrent, scarring, painful aphthae is recognized under many names, one of which is periadenitis mucosa necrotica recurrens.[1] Cases of such aphthae are all alike and like nothing else, but their cause, which I think must be a specific one, is entirely unknown. Three cases were reported by Sibley [2] in 1899 as of "neurotic" origin, and Sibley cited Jacobi as having described 3 cases in 1894. These are the earliest reports I have found.

Commencing as a small nodule within and beneath the mucous membrane of the lip, cheek or tongue, a lesion increases in size, sloughs and causes severe pain, becomes a crateriform ulcer with inflamed, firm borders, runs a course uninfluenced by local treatment and eventually heals, leaving a soft, pliable, depressed, whitish scar. Several lesions may be present simultaneously. The patient, suffering over a period sometimes of many years, can scarcely swallow during exacerbations. He seeks help, generally without any success whatever despite the ingenuity of numerous consultants, and shows a mouth with many scars to the sympathetic practitioner, who knows the better the wider his experience is that he can indeed do little to give relief.

REPORT OF CASES

CASE 1.—Mrs. S., a white woman aged 35, seen in July 1940, had had ulcers in her mouth since the age of 16 or 17, and they had been present almost constantly during the past four or five years. At times the pain caused by them was so extreme that she could not eat. She had received many kinds of treatment, including local efforts, injections and extraction of all teeth, with no benefit. Figure 1 shows her scarred tongue. Similar atrophic scars were seen in the mouth on the lingual side of the lower lip, the buccal mucosa, the tonsillar pillars, the soft palate and the uvula. She had one active lesion. Knowing nothing better to do, I gave her intracutaneously the contents of a vial of smallpox vaccine and prescribed troches of ethyl aminobenzoate. Having been vaccinated successfully many years before, she responded to this vaccination with only an itchy papule which disappeared within a week, a typical immune reaction. Such a vaccination is often notably successful in preventing recurrences of herpes simplex; sufficient cross immunity has resulted to relieve the sufferer

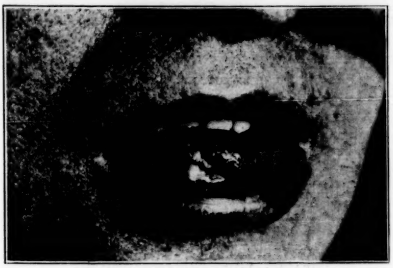

Fig. 1 (case 1).—Scarred tongue.

from recurrent herpes for from six months to two years in my experience. In this case, however, it did no good.[3] A second vaccination was given by her home physician, Dr. J. L. Post, late in July, again without benefit. Solution of potassium arsenite was tried, but a dose of 5 drops three times a day caused her eyelids to swell, and during the five weeks from July 2 to August 7 three new ulcers developed. Empirically, I suggested sulfathiazole, which was given by Dr. Post in a dose of 1 Gm. four times a day from August 10 until August 30, at which time the patient reported by mail: "So far the sores in my mouth are fewer and comparatively smaller. . . . Altogether I took three dozen tablets. . . . I am greatly encouraged for I do not have any large bad places like you saw." I suggested increasing the dose, for studies of the blood, and the clinical opinion of Dr. Post indicated that she tolerated the drug satisfactorily. She took 1.5 Gm. four times a day for four days during September to a total dose of 24 Gm. Her mouth healed completely "for the first time in four or

Fig. 2 (case 2).—*A*, appearance of tongue before treatment; *B*, appearance after five days' treatment with sulfathiazole, 0.5 Gm. three times a day.

five years," and was asymptomatic for two months. Then the disease recurred. I suggested a course of 0.5 Gm. four times a day for seven days. With this dose the lesions became smaller, but new lesions continued to appear.

CASE 2.—Mr. B., a white man aged 26, seen Dec. 2, 1940, had one ulcer on his tongue (fig. 2, *A*) and numerous scars on

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6. Keys, S., and Walther, W. W.: Lymphosarcoma Simulating Duodenal Ulcer, Lancet **1**: 1169-1170 (May 15) 1937. Eusterman, G. B., and Balfour, D. C.: The Stomach and Duodenum, Philadelphia, W. B. Saunders Company, 1935.

7. Madding, G. F., and Walters, Waltman: Lymphosarcoma of the Stomach, Arch. Surg. **40**: 120-134 (Jan.) 1940.

1. Sutton, R. L.: Periadenitis Mucosa Necrotica Recurrens, J. Cutan. Dis. **29**: 65-71 (Feb.) 1911.

2. Sibley, W. K.: Brit. M. J. **1**: 900, 1899; cited by Sutton, R. L., Sr., and Sutton, R. L., Jr.: Diseases of the Skin, ed. 10, St. Louis, C. V. Mosby Company, 1939, p. 1491.

3. Woodburne, A. R.: Herpetic Stomatitis (Aphthous Stomatitis), Arch. Dermat. & Syph. **43**: 543-547 (March) 1941. Woodburne thought the disease under discussion to be a form of herpetic stomatitis and reported favorable response to intracutaneous vaccination with smallpox vaccine.

the oral mucous membranes. He had had ulcers about once in two months on the average during the past year and a half. I prescribed sulfathiazole in doses of 0.5 Gm. three times a day. The response was prompt and gratifying, for five days later the ulcer showed good clinical improvement (fig. 2, *B*), and the patient reported relief from pain within forty-eight hours after starting the drug. His lesion healed satisfactorily. Late in December a new sore commenced but soon disappeared without treatment. In March 1941 a full fledged ulcer appeared, but similar use of sulfathiazole produced the same effect of aborting the lesion and giving relief from pain.

CONCLUSION

In 2 cases of recurrent, scarring aphthae, sulfathiazole was beneficial in relieving soreness of the lesions and promoting prompt healing. Sulfathiazole did not prevent recurrences, however, but it gave comparable relief a second time. A large dose works better than a small one. I know no other treatment as effectual.

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A FOLLOW-UP REPORT ON RHEUMATIC SUBJECTS TREATED WITH SULFANILAMIDE

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The use of sulfanilamide to prevent hemolytic streptococcus infections and recrudescences of acute rheumatism in persons known to be subject to rheumatic fever has given encouraging results. The observations by Thomas and her collaborators [1] working with adults in Baltimore, and observations on children in New York [2] indicated that a level of sulfanilamide in the blood of about 40 micrograms per cubic centimeter maintained throughout the school year protected against streptococcic pharyngitis and rheumatic recrudescences. One factor that it was impossible to control in the New York study was the increasing age of the group. Between 1936 and 1939 many of the children passed puberty, and, as is well recognized, rheumatic subjects tend to have fewer recrudescences in adolescence than during childhood. It was therefore possible to regard the increasing age of our patients as largely contributory to the decreased incidence of rheumatic fever.

One way of determining whether increasing age was significant in our results was to withdraw sulfanilamide from the patients who received prophylactic doses in the period 1936-1939. This we did during 1939-1940 to a group of 100 patients, mostly adolescents. None of these hundred patients had had streptococcic pharyngitis or manifestations of rheumatic activity while they received sulfanilamide. Since the prophylactic doses have been discontinued the patients have lived in the same environment and have received the same clinical and laboratory examinations as previously reported.[3] Thirty-two of these 100 patients contracted hemolytic streptococcic pharyngitis during the first twelve months following the withdrawal of sulfanilamide, and in 40 per cent of these untreated, infected patients rheumatic fever developed. This incidence of streptococcic infection was the rate expected for our clinic patients; the incidence of rheumatic recrudescence following infections was perhaps moderately less than was expected for a similar group of rheumatic children under the age of 12 years.

These follow-up observations show that the rheumatic children who escaped streptococcic infection and rheumatic activity while receiving sulfanilamide prophylactically between 1936 and 1939 were still susceptible in 1940 to both streptococcic pharyngitis and rheumatic fever. It seems justifiable, therefore, to conclude that the absence of rheumatic recrudescence in the sulfanilamide-treated subjects previously reported was due to the drug and not to a change in susceptibility. It is also clear that the prophylactic effect of sulfanilamide does not exert any beneficial effect beyond the period of treatment.

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The work reported in this communication was carried out under the W. K. Kellogg Foundation Fund.

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SENSITIZATION TO THIAMINE HYDROCHLORIDE

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The widespread use of thiamine hydrochloride parenterally makes this report of acquired sensitivity to the substance of some clinical interest.

REPORT OF CASE

A white married woman aged 72, who had no prior history of allergic symptoms, was advised by her physician in September 1940 to take thiamine hydrochloride subcutaneously each day for ten days. This was administered in 25 mg. doses, and at the expiration of the ten day period the interval was increased to seven days. Eight injections were given, one each week, when she was advised to discontinue medication. The patient felt so well that she consulted a physician in a different city and discussed the possibility of continuing thiamine, since she had had such definite benefits. He acquiesced and gave her weekly injections of 25 mg. for eight or ten more doses. The patient fell and fractured the left radius at this time, and the thiamine was continued at weekly intervals until the latter part of April 1941.

In February 1941 the patient noticed that soon after leaving the doctor's office she sneezed violently several times. This occurred after each injection of thiamine, but she was under the impression that some substance in the physician's office was responsible for her reaction. There were no marked local reactions, but occasionally the site of injection would itch for several hours. The same sensation was felt frequently in sites of previous injections.

When visiting in another city during the latter part of April 1941 the patient allowed ten days to elapse before reporting for her injection of thiamine. About thirty minutes after treatment her eyes and lips became edematous, large urticarial wheals appeared over the body and a feeling of tightness was experienced in the chest. She became very dyspneic and cyanotic, and there was audible wheezing. Epinephrine was given within a few minutes, and at the end of five or six hours the entire reaction had subsided.

I was then consulted to determine the cause of the severe reaction. An intradermal test was done with the commercial preparation of thiamine which had been used throughout the course of injections, and a large urticarial wheal resulted. Passive transfer was made to a nonallergic individual, and at the end of forty-eight hours the sensitized sites reacted strongly when the same preparation of thiamine was introduced.

In order to rule out the possibility of a reaction from some preservative used in the commercial preparation, a solution of thiamine hydrochloride in water was prepared without the addition of any other substance. This produced exactly the same type of reaction as the commercial preparation in both the patient and the sensitized areas of passive transfer.

COMMENT

The patient obviously was not sensitive to thiamine at the beginning of treatment. Since the injections were given at intervals of about seven days, the latent or incubation period was not exceeded and only minor reactions were experienced. When the interval was increased to ten days, this period was exceeded and a constitutional reaction ensued.

The immunologic response was identical with that experienced with well known sensitizing proteins such as horse serum.

The clinical importance is apparent. It is demonstrated that thiamine hydrochloride given parenterally is capable of sensitizing human beings. Subsequent injections of this material which exceed the latent period can produce anaphylactic shock. Thus it seems advisable to make intradermal tests with thiamine hydrochloride before administering it, particularly to patients who previously have received thiamine.

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SYMPOSIUM ON MEDICAL PREPAREDNESS

The articles which follow are part of a series read at the annual session of the American Medical Association in Cleveland, June 3, 1941. The remaining articles in the series will appear next week.

THE MEDICAL PROFESSION AND MEDICAL PREPAREDNESS

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The part of the medical profession in the National Defense Program is an important one. Without health, participants in industrial production and members of the armed forces become liabilities rather than assets. The American workman loses on an average eight work days a year from illness, the aggregate number of such days so lost reaching the astounding figure of three hundred and forty million, or more than a million work years a year. The armed forces of the United States during World War I suffered a loss of six million, eight hundred thousand work days from venereal disease. These staggering totals on two fronts alone graphically indicate the size and the importance of the task that confronts American medicine. The vast amount of highly specialized, scientific knowledge accumulated by the medical profession in relation both to prevention and to cure of disease is capable of enormously enhancing the strength and momentum of industrial and military effort. With this end in view the medical profession through many agencies is actively engaged in a program of medical preparedness in order that it may render our country the best possible service in its defense of our democratic way of life. The responsibility of the profession may be said to rest in three categories: the provision of service to the armed forces, the provision of service to industry and the continued care of the civilian population. The American Medical Association, through its House of Delegates, appointed in June 1940 a Committee on Medical Preparedness to "establish and maintain contact and suitable relationship with all governmental agencies concerned with the prevention of disease and the care of the sick, in both civil and military aspects, so as to make available at the earliest possible moment every facility that the American Medical Association can offer for the health and safety of the American people and the maintenance of American democracy." At the request of the Surgeon Generals of the Army, Navy and Public Health Service the American Medical Association through its Committee on Medical Preparedness undertook as a patriotic duty and at its own expense a survey of the medical personnel of the United States and its possessions to determine the number of physicians available for service in various capacities and to develop facts that would be useful in aiding the profession to render the greatest possible service in any national emergency that might develop.

Among the objectives which the committee hopes and expects to ascertain as fully as possible through this nationwide survey are (1) the number of physicians licensed to practice medicine, (2) the number capacitated for active service and the number of those incapacitated, (3) the number and location of physicians who may be qualified and available for service with the military forces of the nation and for other essential governmental services in case of national emergency, (4) the number available for service to the civilian population under emergency conditions, (5) the availability and qualifications of those who can serve acceptably in special fields of medicine, (6) the number and identity of physicians qualified for teaching and research who are believed to be essential for the proper maintenance of educational institutions and (7) the number and identity of physicians already engaged in governmental service. When the questionnaire, with which all of you are familiar, was finally approved and prepared for distribution, a copy was sent with explanatory statements to every physician in the United States, its territories and possessions whose names and addresses were available. The total number of questionnaires distributed is in excess of a hundred and eighty thousand, of which one hundred and fifty thousand, four hundred and seven, or 82.9 per cent, had been filled in and returned by physicians in the United States as of April 1, 1941. Of the physicians in the territories and possessions, one thousand, five hundred and seventy-one have returned their questionnaires as of April 1, 1941, a return of 31.7 per cent. While completed questionnaires are still being received, it may be that the total number of returns will not be greatly increased. The questionnaires returned by individual physicians have been checked and edited as rapidly as possible for the purpose of transferring data to punch cards so that the information may be easily and readily available in various combinations for official agencies and for other essential purposes. On April 1 of the current year one hundred and thirty-eight thousand, two hundred and sixty-three punch cards had been prepared and the process will be continued until fully completed. Listings of various groups in the profession and of specialists in various fields of medicine have been partially prepared and will be completed when all available data have been assembled. Independent scientific organizations, including those composed of specialists, have given most valuable aid in an attempt to determine the availability and qualifications for special services. This is the first time in the history of our country that an effort has been made to obtain a record of each individual physician based on the character of his practice and his qualifications. A knowledge of the number, age, location, qualifications, availability and other characteristics of all members of the medical profession is essential in order that the total personnel resources can be utilized in intelligent preparation, appropriate assignment and adequate services for the armed forces, expanding industry and the civilian population. If the information secured is properly utilized, it should be

possible to provide necessary medical service for the military forces now on duty and for expanded forces in case of increased emergency with the least possible interference with the needs of the civilian population and of those of essential medical institutions.

INDUSTRIAL MEDICINE AND HYGIENE

The provision of medical service to industry assumes important and difficult proportions. Modern military activity depends basically on the efficient coordinated industrial production. No other factor associated with the current campaigns has been so forcibly impressed on our public consciousness. It finds greatest expression in the efforts now being made by our governmental, industrial, labor and military leadership to make available material sufficient for national defense. In warfare as now waged, the mental and manual work of twelve (to state the proposition conservatively) is necessary to maintain one effective combatant in the field. Loss of working time by indispensable skilled craftsmen then must be regarded as wartime casualties equal in importance to those which occur in actual combat. The same careful mobilization of medical and hygienic resources will be required to keep them under control. To every physician who indicated active participation in industrial medical activity in reply to the questionnaire of the American Medical Association Committee on Medical Preparedness an additional inquiry has been directed, designed to acquaint the committee with the special qualifications which individual practitioners possess and also certain details about industrial medical facilities which they command. Once these data are collected and tabulated, it will be possible to enumerate with considerable accuracy all physicians who have established competence in this field. These for the most part are the men and women who limit their work to or give special attention to one or another of the various aspects of industrial medical activity and who constitute the membership of national and local societies devoted to industrial medicine, surgery and hygiene. It is on this group that we must depend at the outset, not only to continue their customary services directly applied to the worker, but as consultants, teachers and administrators, local or regional as the emergency requires. Sufficient information has been accumulated defining quite clearly that actual shortages exist in medical personnel capable of such immediate service. In view of these limitations in qualified personnel, two steps seem practical and logical. The first is that physicians in industry should not be assigned to services of strictly military nature unless special experience, training or previous commitments make such a procedure unavoidable. The other is that it becomes imperative to explore all available opportunities for instruction in the special technics of industrial medicine and hygiene, to the end that an adequate reservoir of well trained physicians and hygienists may be regularly available. Physicians working in the industrial field are highly competent in their own special jobs, but as far as munitions are concerned they are as a whole untrained.

The primary need in the present emergency is an increase in the number of physicians and engineers qualified in industrial health and medicine and their further training in the requisites for control of the hazards of war industries. Among the avenues of approach to the problem being employed are: (*a*) A survey to determine the present and future needs for men trained in industrial health and medicine. (*b*) An estimate of the facilities that are now available for training in industrial health and medicine and the development of additional facilities for this purpose, inclusive of the nature of the training that will be required, its scope and length of time. Coordination of the work of the subcommittees on industrial health and medicine and on medical education of the Health and Medical Committee of the Federal Security Agency with that of the Council on Industrial Health of the American Medical Association and of the various national associations of industrial physicians and surgeons. (*c*) The development and application of measures for protection against occupational hazards. This phase of the work includes questions pertaining to safety measures of various kinds, the solution of toxicologic and engineering problems, the protection against noise, fatigue and so on. (*d*) Plans for the promotion of environmental sanitation and other health questions pertaining to housing projects in connection with existing and new industrial plants.

It is of the utmost importance that the needs for medical service to the civilian population be carefully safeguarded while supplying the armed forces and industry with medical personnel. Some central agency with authority to make decisions would be most helpful in determining and defining civilian needs as well as designating those physicians essential to such. In World War I many communities were deprived of medical service because of the patriotic urge on the part of members of the profession to enter the service. It is fully as patriotic to accept designated home duties and quite as essential that the medical wants of civilians be met and, further, that those physicians supplying such be relieved of any presumed odium because of their absence from the armed forces.

DEFERMENT OF MEDICAL STUDENTS

Since the passage of the Selective Service Act the medical profession has been keenly aware of the possible disruption of the classes of medical schools, of the faculties of medical schools and of the staffs of hospitals by the strict application of its provisions. Since there are no exemptions other than for ministers of the gospel and divinity students and no provision for mass deferments beyond July 1 of this year, the deferment of medical students and doctors within the draft age became a responsibility of the individual draft boards. The number of these boards is in excess of six thousand and, as each is autonomous, unanimity of action in maintaining an adequate supply of doctors could not be expected. Doctors are quite as essential to the defense program as planes, tanks, machine guns and combat troops. A bottleneck in their production would be as disastrous as a bottleneck in any other defense industry. While the number of medical graduates, five thousand three hundred a year, seems reasonably adequate to meet the normal needs of the civilian population, the much higher ratio of medical personnel required by the military services (6.5 per thousand as compared to about 1.5 per thousand for the civilian population) produces an annual deficit in available physicians. If medical students are withdrawn from school for a year of military training as enlisted men, the flow of medical graduates will be retarded. Medical students who are inducted for a year of service as enlisted men will have discharged their obligation in connection with military service and cannot be required to accept another year

of service after graduation. The medical profession does not ask exemption for its students but does request deferment of service until completion of their medical education, when their services in all phases of the defense program will be of infinitely greater value. It does ask exemption for its members who hold key positions in medical schools, on hospital staffs, in industry and in civilian life, since their duties in their present positions are indispensable in the national defense program. It is essential to medical preparedness that a continuing supply of physicians be sustained, and the maintenance of this supply is directly dependent on the operation of the medical schools of this country with full quotas of students. The civilian and federal hospitals of the country require the services of recently graduated medical students as interns, such internship being a part of the training of physicians, and in many states has become a requirement for licensure. The medical profession welcomes and endorses a policy of deferment from military training of individual medical students recently proclaimed by Brig. Gen. Lewis B. Hershey, Deputy Director of Selective Service. In announcing the Selective Service policy of deferring medical students who are making satisfactory progress in their professional training, General Hershey's memorandum to state directors stated:

> There are no replacements for medical students who are withdrawn from school. Consequently, if the supply of medical students who are to be graduated into the medical profession is reduced through their induction to serve in a nonprofessional capacity, an increasing reduction of physicians available for military service as well as an aggravation of the increasing over-all national shortage will result. It is of paramount importance that the supply be not only maintained but encouraged to grow, and that no student or intern who gives reasonable promise of becoming an acceptable medical doctor be called to military service before attaining that status.

THE HEALTH AND MEDICAL COMMITTEE

With the approval of the President, the Council of National Defense on Sept. 19, 1940 established "as a subordinate body to the Council a committee to be known as the Health and Medical Committee," its members being Dr. Irvin Abell, Chairman, the Surgeon General of the Army (Major Gen. James C. Magee), the Surgeon General of the Navy (Rear Admiral Ross T. McIntyre), the Surgeon General of the United States Public Health Service (Dr. Thomas Parran) and the chairman of the Division of Medical Sciences of the National Research Council (Dr. Lewis H. Weed). The committee was given the responsibility of advising the Council of National Defense regarding the health and medical aspects of national defense and of coordinating health and medical activities affecting national defense. It was granted authority to utilize to the extent that such facilities are available for such purpose the laboratories, equipment and services of the Medical Department of the Army and Navy, of the Public Health Service and of other government institutions; and, within the limits of the appropriations allocated to it, to contract with and transfer funds to such institutions and to enter into contract and agreements with individuals or educational or scientific institutions for studies, experimental investigations and reports. On Nov. 28, 1940 the Council of National Defense, by executive order of the President, transferred the Health and Medical Committees to the Federal Security Agency, of which Mr. Paul V. McNutt is the administrator and coordinator. To fufil its duties of coordinating health and medical activities, affecting national defense, the Health and Medical Committee appointed six subcommittees which represent large sectors of medical interests. The Subcommittee on Dentistry has, through the American Dental Association, undertaken the listing and classification of all dentists and has under discussion the provision of dental services for the civilian population surrounding industrial centers and military establishments. The Subcommittee on Medical Education has discussed the possible modifications of the medical curriculums which may be advisable or necessary to meet an increased demand for qualified medical personnel. It has also been interested in securing deferment of military service for medical students in good standing in approved medical schools and deferment of military service for interns.

The Subcommittee on Hospitals has also considered the status of interns and residents in relation to the Selective Service Law. It has pointed out the need of beds for the hospitalization of neuropsychiatric and tuberculous patients brought to light by the examinations of the draft and induction boards. The Subcommittee on Negro Health considered fundamental health problems affecting the Negro and the availability of Negro physicians for service with the armed forces and emphasized the need for scholarships to encourage and aid Negro medical students. The Subcommittee on Nursing with the aid of the Public Health Service and the American Red Cross is making a national inventory of nursing personnel with the aim of supplying the armed forces with nursing service and at the same time affording continued service for the civilian population. The Subcommittee on Industrial Medicine has been busily engaged with the problems of industrial health and medicine and has made a real contribution in this field.

The Health and Medical Committee requested the National Research Council to establish committees on aviation medicine and neuropsychiatry as these fields could be more appropriately handled by its Division of Medical Science. The airplane as a technical machine has been developed to a point beyond the resistance of the human machine that operates it, bringing to the fore medical problems for solution, while psychiatric and neurologic disturbances take on an added importance during war time. In order that scientific knowledge of medical problems related to defense both in its military and in its industrial aspects may be extended, the Health and Medical Committee has sought the aid of the National Research Council and of the National Institute of Health of the Public Health Service in the special fields of professional advice and research. Both institutions are making important and extremely valuable additions to the medical preparedness program.

The cooperation of the civilian profession is paramount in the formulation and completion of the medical efforts in the preparedness program, one which the leaders of the nation hope will insure peace but which will insure readiness should the grave responsibilities of war come. Except for the battle casualties, the health and medical problems will reach the same magnitude. The medical profession by education, experience, tradition and moral obligation is prepared to accept now, as it has in the past, the protection of the health of all the people, whether in the military establishment or in the civilian population.

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THE NATIONAL RESEARCH COUNCIL AND MEDICAL PREPAREDNESS

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It is now slightly over a year since the Division of Medical Sciences of the National Research Council established the first committees which were to act in an advisory capacity to the Surgeon Generals. The inauguration of this advisory activity came as a result of an initial request from Surg. Gen. James C. Magee that the division give advice about certain medical problems, particularly regarding the administration of the newer chemotherapeutic agents and regarding the treatment of surgical shock. This request of General Magee's was promptly discussed with the officers of the Medical Corps of the Navy and of the Public Health Service, and general agreement as to the desirability of such advisory committees was obtained. It seemed quite appropriate that the Division of Medical Sciences should be asked to serve in this advisory way to the armed services. The National Research Council was established in 1916 as the operating agency of the National Academy of Sciences under the congressional charter of the academy. Through the World War the council functioned as the Department of Science and Research of the Council of National Defense and also as the Science and Research Division of the Signal Corps. At the end of the war in 1918, President Wilson issued an executive order requesting the academy to perpetuate the National Research Council. As a quasi-governmental institution the council, like the National Academy of Sciences, then became permanently established as an agency to give advice to the government "on any subject of science or art." This statement, in its general nature, shows the broad scope of activity, and as a continuing scientific body the council of course stood ready to assume the duties requested of it by the Surgeon Generals.

With the establishment of the first two committees, one on chemotherapeutic and other agents and one on transfusions a year ago, many problems relating to other branches of medicine were early presented by the representatives of the Surgeon Generals, and it was quickly realized by the civilian members and by the medical officers that additional committees covering other sectors of medicine would be needed if the council was to meet the requests for advisory services. Hence, in addition to the first two groups, main committees covering the fields of medicine, surgery and information were established during the early part of the summer of 1940. Many technical subcommittees were organized under the main committees and promptly met the tasks assigned. The correlation of the activities of the many advisory bodies made greater and greater demands on the office of the Division of Medical Sciences, and it became necessary for the chairman of the division to devote full time to these duties in Washington. Soon thereafter Dr. S. V. Larkey and Dr. E. H. Cushing were added to the office force; and they too are continuing to put their full energies into the administrative end of the undertakings of the advisory committees.

During the late spring and early summer of last year it became apparent that correlation of medical efforts in the national defense should be effected through some sort of coordinating body. On Sept. 19, 1940 the Council of National Defense created the Health and Medical Committee, charged with responsibility "to coordinate health and medical activities affecting national defense." As you all know, Dr. Irvin Abell was appointed chairman of this committee: the other members were the three Surgeon Generals and the chairman of the Division of Medical Sciences, National Research Council. This group promptly undertook the coordination of activities in medical affairs relating to the national defense. At an early meeting of this committee the National Research Council was requested to appoint two further committees, one on aviation medicine and the other on neuropsychiatry. These committees were appointed by the Division of Medical Sciences and became functional in the early fall. Later the Health and Medical Committee on Nov. 28, 1940 was transferred to the Federal Security Agency and was placed under Mr. Paul V. McNutt as "Coordinator of Health, Welfare and Related Defense Activities."

The appointment of the chairman of the Division of Medical Sciences, National Research Council, as a member of the Health and Medical Committee related the advisory committees of the council to the general coordinating body. This indirect relationship was considered to have definite advantages, as the committees remained as quasigovernmental bodies rather than as direct offsprings of the Health and Medical Committee. In this way it was felt that the nonmilitary medical point of view could be presented in best fashion to the Medical Corps.

With the transfer of the Health and Medical Committee to the Federal Security Agency, the sum of $250,000 was made available for the purposes of the coordinating committee. Of this total, $100,000 was designated as for administration; the remaining sum of $150,000 was marked for support of medical research. Transfer of balances for the administrative account to the research item in the budget was permitted, but no transfer from the research funds to administration was allowed. The Division of Medical Sciences received from these monies available to the Health and Medical Committee appropriations in the following amounts: $50,000 for the purpose of preparation of special reports, committee meetings (including travel expenses) and so on, $60,000 for the support of projects in medical research, particularly in the field of aviation medicine and $7,050 for the support of two specific projects in aviation medicine. To these appropriations of $117,050 should be added a refund to the National Research Council in the amount of approximately $9,900. This recapture represented the cost of travel and of committee meetings held in the interval between Sept. 19, 1940 (date of establishment of the Health and Medical Committee) and Jan. 2, 1941, at which time the initial appropriation of $50,000 became available by contract. In total, then, the National Research Council in its Division of Medical Sciences has received from the Health and Medical Committee of the Federal Security Agency contract authorizations to the total of approximately $127,000. From the appropriations available for research ($67,000) the division promptly made a number of allocations to institutions in order to secure inauguration and prosecution of medical research projects essential to the national defense. Unfortunately, because of technical difficulties, payments on the contracts for these investigations were not made until less than one month ago, and in consequence much of the research was not undertaken as promptly as would have been desirable. It is hoped that no further difficulties will retard the payments under

the contracts drawn up between the Federal Security Agency and the National Research Council.

So, at the end of this year of activity in the Division of Medical Sciences, it would seem interesting to appraise the work accomplished by the various committees in the fields of professional and research advice. It is not possible here to review extensively all the accomplishments, which I believe are real, but reference should be made to the number of important recommendations regarding therapeutic procedures, particularly in chemotherapy and in treatment of venereal and tropical diseases. These recommendations were accepted by the Medical Corps of the Army and Navy and have been distributed to the officers in the form of circular letters. The value of these directives is undoubted; the reports represent a significant contribution on the part of civilian medicine. Aside from the recommendations regarding therapeutic procedures, the committees have assisted in revising the regulations setting the standards for the physical examinations of recruits. These regulations, adopted by the War Department for use in every induction center, were published in pamphlet form (MR 1-9) and have constituted also the standard for examination of all recruits by the Selective Service System in the local boards. Even after the original edition of these regulations was published with the many amendments suggested by the committees of the Research Council, further revisions have constantly gone forward. These further recommendations emanating from the committees and subcommittees will be included in the next edition of the regulations to be issued shortly after July 1.

A further activity of the committees has been to lay out research programs covering medical problems of vital interest to the Medical Corps and directly related to the national defense. These medical problems in part have been presented by the liaison officers and in part have originated in the technical subcommittees. Many of these investigative projects have received approval of the main committees as representing essential research undertakings. The list of these research problems is large and the expenditure called for, both in government and civilian laboratories, is far beyond the sums made available during the present fiscal year for the purpose. Again, it is hoped that these essential questions in military medicine can be worked on with adequate financial support by the government; their solution will represent an important contribution to the national defense program.

While most of the research projects remain unfortunately unsupported at the present time, a few definite research undertakings have been pushed forward as the result of the energy and foresight of the committees. Some of these projects have gone forward in civilian laboratories without any federal support; others of the investigative undertakings, particularly in aviation medicine, have received small grants through the Health and Medical Committee and the work is now going forward. Two important projects relating to aviation physiology were referred by this coordinating body to the National Defense Research Committee, of which Dr. Vannevar Bush is chairman; they could be accepted for study by this NDRC group, as they represented development of instruments of warfare. All in all, the record in research is one of minor accomplishment, but, considered from other standpoints, the record represents a civilian contribution of some significance to the national welfare. Every effort has been made to secure the cooperation of university laboratories in much needed research, and the future should be a much brighter one if ample support is provided during the next fiscal year.

In the general setup of the committees advisory to the Surgeon Generals within the Division of Medical Sciences, National Research Council, thought was properly given to the relationship of these undertakings to the activity of the American Medical Association. Early in 1940 the Association had established under the chairmanship of Dr. Irvin Abell a Committee on Medical Preparedness; this committee, at the request of Surgeon General Magee, assumed the most important task of assembling a complete roster of the medical graduates and registered physicians of the United States. The committees of the Research Council in no way invaded the field of activity of the Committee on Medical Preparedness—rather were the council's committees prepared to cooperate thoroughly regarding the undertakings of the American Medical Association. Through interlap of membership, a close correlation has been achieved. Thus in one significant respect the committees of the Research Council, in cooperation with the Committee on Medical Preparedness, have undertaken to supply certain evaluations of professional and administrative abilities to the Surgeon Generals through the records of the American Medical Association. In this work Dr. James E. Paullin, Dr. Frederick A. Coller and Dr. Harry A. Steckel in particular have carried a heavy load, but the results achieved have been of vast usefulness. Such information as has been forthcoming is placed on the roster card of the physicians and will be used by the Surgeon General of the Army through the Chicago offices of the Association.

In addition to cooperative procedures with the Association's Committee on Medical Preparedness, the Division of Medical Sciences has carried out certain studies which are of particular interest to the Public Health Service and to the armed services. These surveys relate to the control of venereal disease in areas adjacent to the military establishments and to the venereal disease control programs of the various states in which large concentration of troops in training occur.

The American Red Cross has made use of the facilities of the Division of Medical Sciences and of its advisory committees in two important enterprises. The American Red Cross and the Research Council were asked by identical letters of the Surgeon General of the Army and the Surgeon General of the Navy to assume responsibilities in regard to the procurement of human blood plasma for the armed forces. In this cooperative venture the Red Cross undertook to recruit the donors for the blood, to provide all necessary collection equipment for the bleedings, to transport the citrated drawn blood to processing centers, to centrifuge the blood and to store the resultant plasma in refrigerated chambers. The Division of Medical Sciences was asked to supply the professional advice and professional supervision for the collection of blood; this is being done through a subcommittee of the main Committee on Transfusions. The project has gone forward with success after initial organization in New York City and is now extending, as facilities for centrifuging and drying are developed, to the larger cities of the East. There is every prospect of rapid expansion of the activities to the other larger centers in the country—in the Midwest, the South and the Far West. The Army and Navy have contracted for the drying of the plasma as furnished by the Red Cross and will ultimately be equipped with the large quantity necessary for use in cases of shock, hemorrhage and burns.

A second request to the National Research Council from the American Red Cross related to the evaluation of the personal and professional qualifications of those applying for service with the Royal Army Medical Corps or with the Emergency Medical Service of Great Britain, in response to the appeal for a thousand physicians from the British Red Cross to the American Red Cross. In this cooperative undertaking with the American Red Cross, the Division of Medical Sciences has arranged for the desired determination of the qualifications of the candidates; and while the number of volunteers has been all too small, the work of the Research Council's committee, headed by Dr. O. H. Perry Pepper and composed of Dr. Morris Fishbein and Dr. Evarts Graham as additional members, has gone forward with success. In this project the facilities of the American Medical Association, the American College of Physicians and of the American College of Surgeons are being used to advantage.

The National Research Council has been able to effect close liaison with the National Research Council of Canada, and prompt and unrestricted interchange of medical information has gone on between the two councils. This desirable relationship with Canadian medical scientists has also been extended to the British Medical Research Council, which is established as a part of the Privy Council of Great Britain. The contacts with Great Britain have not been as intimate as could be desired, but in some fields (as in aviation medicine) it has been close and effective. The need at the present time is for a permanent medical liaison officer with station in London where he would be in close relationship to the British Medical Research Council and to the many activities in military medical research. Unfortunately the funds at the disposal of the Research Council have not permitted this effective and permanent liaison, though the Council was fortunate in having Dr. John F. Fulton proceed to London last fall as its representative for a short visit of reconnaissance. Out of this visit came much of value. It must be hoped, for the successful prosecution of military medical work, that within a short time an office for interchange of information may be established in London.

This report of the activities of the Division of Medical Sciences over the past year is necessarily incomplete and in some ways hardly gives the true picture of the value and extent of the committees' activities. It is my feeling that the most important achievement of these committees is that of establishment of friendly and intimate relations with the various officers of the two Medical Corps who are stationed in the Surgeon Generals' offices. Thus close contact with the important executives of the Medical Corps has been of great service, both to the committee members and, I hope, to the Medical Corps. The record then becomes one of some achievement for the past twelve months but of many disappointments and of efforts expended futilely in the inevitable turmoil which accompanies the expansion of peace time organizations into war time enterprises. Those of us who have been close to the work of the main committees and the many technical subcommittees of the council have felt no permanent discouragement, and there is prospect that a record of achievement for the next twelve months will be much brighter and much more encouraging to all of the medical profession. To gain this desired goal, medicine and medical research will necessarily have to be related much more closely to the main defense activity, and large sums of money must be made available for the integration and support of medical research on problems vital to the national defense.

And I cannot close without expressing the thanks of the Division of Medical Sciences, National Research Council, to those many busy physicians and surgeons who have given so freely of their time and energy to those tasks within the council which grew out of the requests for aid from the Surgeon Generals. Especially to the chairmen of the seven main committees—to O. H. Perry Pepper in medicine, to Evarts A. Graham in surgery, to Walter B. Cannon in transfusions, to Morris Fishbein in information, to Eugene Du Bois in aviation medicine, to Perrin H. Long in chemotherapy, and to Winfred Overholser in neuropsychiatry—a great debt of gratitude for effective service is due; and to the chairmen and members of the many subcommittees a similar debt exists. Likewise in a slightly different way many universities and institutions have lent the services of their men to the Research Council; the men thus lent are devoting full time or part time to this defense work. The cooperation and unstinting service of these many physicians and of the institutions form the brightest record of the year for the National Research Council in its endeavor to be of aid in this period of national emergency.

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THE ROLE OF INDUSTRIAL MEDICINE IN MEDICAL PREPAREDNESS

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"This war is going to be one of endurance. The weapons of sea power and industrial strength work silently, and only at rare intervals do they attract the headlines." These words of Lord Halifax give special prominence to the contention that the skilled worker has become of importance equal to that of the man under arms. Loss of working time by skilled and indispensable workers, no matter what the cause, must be classed in war times as casualties which require the mobilization of medical facilities for competent handling just as do those which occur in the field. This fact was brought before the medical profession and the public by the House of Delegates last year when the importance of medical service to the industrial worker was stressed and every facility of the American Medical Association was offered for the health and safety of the American people and the maintenance of American democracy.

In our industrial population the loss of time from work due to illness and injury amounts to over 340,000,000 days a year or considerably over 1,000,000 work years each year. Annually there are approximately 17,000 occupational deaths from accidents, 70,000 permanent disabilities, and 1,400,000 temporary disabilities. Many problems arise from diseases peculiar to certain occupations, and with the present industrial expansion the development of new hazards is to be anticipated. Industrial workers have higher rates of physical defects than do nonindustrial workers, and this excessive mortality is especially notable among unskilled workers. The amount of time lost from general illness is fifteen times as great as the total lost from both accidents and occupational diseases. The problems of industrial medicine are much the same in war as in peace. Such differences as occur are mainly of degree or intensity of emergency conditions. The solution

should not be hurriedly improvised but should be an integral part of our national life. The care of workers during illness cannot be considered as merely an instrument of production to be administered by industry or government. It is a medical service in which the patient-doctor relationship should be one of mutual confidence and self respect. The medical problems of industry may be expressed in terms of objectives which, in the industrial medical field, have long been considered to be (1) the determination of physical and mental fitness for work, (2) the promotion of employee health and efficiency, (3) the instruction of the worker in healthful living and (4) reduction of lost time due to illness and injury.

Preemployment and periodic health examinations have not made extensive progress, but the stimulus of the present emergency with the accentuation of industrial health should lead to a widespread development of this important medical measure. The importance of proper labor relationships must be recognized as essential to the success of any effort to extend physical examination programs. In the past, organized labor has objected to programs of physical examination and more particularly to periodic health examinations. These objections have in part been based on the fear that medical information so obtained may be used unfairly. This fear is not entirely without foundation in experience and is the expression of a normal reaction. It must be recognized as an integral part of this problem. The important contributions to the health and efficiency of workers to be derived from periodic medical examinations need no emphasis. As Dr. Parran has stated, it is wasteful for industry to train a highly skilled employee over long months only to have him break down suddenly with tuberculosis, mental disease or some crippling condition.

The objectives of physical examination in industry should be to keep the worker fit, to place him in a job where he can do his best work without harm to himself or to his fellow workers, to detect communicable disease and to refer him to his own doctor for needed treatment. The handicapped worker should be rehabilitated.

The problems of industrial hygiene may be attacked from two angles: first, the hygiene of the individual and, second, the hygiene of the environment in which he works and lives. The first problem is a proper function of the medical sciences, while the working environment has to do largely with engineering practices. It is the province of the medical profession to diagnose diseases and primarily to recognize the existence of such diseases as may be due to the working environment. Based on the conclusions of the physician, the engineer learns what unhealthful conditions should be investigated and what control measures are to be initiated. It is essential, therefore, that the various professions understand clearly the functions of each and approach the solution of the problems of industrial hygiene as a joint effort and cooperate with one another to the fullest extent.

The medical problem may best be approached by grouping physicians in industry into full time industrial physicians and part time and on call physicians. Approximately 85 per cent of workers are employed in small plants in which there are no organized medical services. Services to these industries are supplied by private practitioners including specialists in various fields, some of whom have made important contributions to industrial medicine. The medical departments of large industrial plants serve as models of efficiency and have demonstrated their worth. The problem confronted by these departments in large industries in the present emergency is largely one of expansion of existing facilities. The fact that medical service to 85 per cent of our workers is predominantly in the hands of private physicians presents an important problem of coordination of effort. In large industries the relatively few full time men who are specialists in industrial medicine have engaged chiefly in measures for the prevention of occupational disease and the promotion of health. Opportunities of a like nature and probably on a larger scale exist in small manufacturing establishments and are available to physicians who render services to these plants. These practitioners have, in the past, limited their industrial activities largely to the treatment of occupational injuries and diseases and have failed to a considerable degree to see the opportunities afforded by industrial hygiene.

Since its organization in 1937 the Council on Industrial Health has been active in stimulating the contributions which the physician, individually and through medical organizations, can make to the industrial workers. It has also stimulated the formation of committees on industrial hygiene in state and county medical organizations and has clearly outlined a program which can be adopted by the state and local societies. Among the objectives of this program are (1) the training of physicians to recognize and report occupational diseases, (2) the training of industry and labor to the value of industrial health conservation, (3) the elevation of medical relations and standards in workmen's compensation, (4) a scrutiny of all social legislation affecting industrial health, (5) a clarification of relationships between industrial and private practitioners, (6) the improvement of relations between physicians and insurance and (7) the establishment of working relations with all state agencies interested in industrial health. The need for cooperation between all interested agencies, both official and voluntary, is plain. The private practitioner, either as an individual or through the state or local medical organizations, should utilize to the fullest extent the services which may be rendered by official agencies in this field. In order to accomplish their objectives, public health workers in industry and in the various government services must make a genuine effort to aid in the development of industrial health services through the agencies of organization of the private physician. No program of a public health nature can be carried to its logical conclusion without such coordinated effort. In the past there has too often been obvious failure to effect such cooperation. This failure must be recognized and surmounted if the best interests of the industrial worker are to be served.

The reduction of lost time due to illness and injury is dependent to a large extent on a clear understanding of the causes underlying these factors. Such an understanding can only be based on accurate and adequate statistical studies of the cause of absenteeism. While excellent studies in this field have been made, notably by Lanza and Vane for the Air Hygiene Foundation, the problem of sick absenteeism is still a complex and elusive one. The figures of eight plus days a year per male and twelve plus days a year per female have emerged as average figures. This is five times greater than the figures for industrial accidents. While it is recognized that the most frequent cause of sick absenteeism is outside of employment, the estimates are necessarily crude because reporting is inadequate. It is

probable that the yearly absence from work due to occupational disease is only a fraction of a day. These absences are more important in some industries than they are in others. The short term disabilities, namely those under eight days, are of the greatest concern, particularly those resulting in one, two and three day absences. It is obvious that this type of sick absenteeism is not remedied by rigid standards of physical examination for even in the army where men are hand picked and under constant medical supervision there is a definite incidence of absenteeism. The public health interest in this problem is apparent by the tremendous incidence of influenza in the recent epidemic, when it was estimated that 64 per cent of the total national population had colds. Commander Stephenson has recently emphasized the fact that the most important single contribution which can be made in this field is reporting. He states that this is illustrated by the fact that we know almost nothing of what happens in trivial accidents in which men lose from fifteen to fifty minutes. By making a study of these small claims and of their causes he believes that the naval industrial organizations alone would save thousands of man hours yearly. Without question the same is true to a much larger extent in many small industries now active on national defense problems.

The Federal Security Administrator is coordinator of all health, medical and related defense activities. He has appointed a committee known as the Subcommittee on Industrial Health and Medicine, which functions through the Health and Medical Committee of the Council of National Defense. This subcommittee is pursuing its work of coordination with these two objectives in view: (*a*) the integration of all federal and state voluntary organizations such as the Council on Industrial Health of the American Medical Association, the American Association of Industrial Physicians and Surgeons, the American Industrial Hygiene Association and the Section on Industrial Hygiene of the American Public Health Association to the end that an organized program in the field of industrial health can be applied to the national defense industries and (*b*) the promotion of a demand for more complete health services in the small, as well as the large, defense industries. The Council on Industrial Health of the American Medical Association is assisting this subcommittee by registering all physicians qualified in the field of industrial health or who have indicated a desire to take up industrial medicine as a career regardless of training or lack of training and experience. This subcommittee held a joint meeting with the Council on Industrial Health in Chicago in January 1941, at which time a joint committee was formed to make recommendations to the Health and Medical Committee covering industrial hygiene needs of national defense. These recommendations were endorsed by the Health and Medical Committee, and proposals with reference to the expansion of the Division of Industrial Hygiene of the Public Health Service were promptly put into effect. Funds for special researches were made available to the Health and Medical Committee and specific projects are now being prepared. It is important to emphasize the fact that the proposed program specifically recommends that the Division of Industrial Hygiene of the National Institute of Health should develop in cooperation with the state authorities and the committees on industrial health of the state medical societies a definite program of instruction designed to acquaint the practicing medical profession with the fundamentals of industrial medicine and designed to carry into effect the minimum standards set up to protect the health of employees.

As time goes on it becomes increasingly clear that elevation of standards of medical practice in industry will improve in direct proportion to the amount of interest expressed by medical agencies closest to industry, namely in state and county societies. Up to the present time satisfactory progress has been made in the organization of these groups for service of this type. There need be no change either in our system of practice or in our organization for practice in this field. Rather there is need for the establishment of effective working relationships between official agencies and our voluntary medical organizations. The adequate application of all related sciences is necessary, and these must be articulated with the work of the general physician.

324 East Milwaukee Avenue.

MEDICAL PROBLEMS PECULIAR TO THE NAVY AND NATIONAL DEFENSE

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In keeping with the address of the President of the American Medical Association, I wish to outline what the Navy Medical Corps is doing to prepare itself to meet all the obligations that will be thrown on it. It is well for all of us periodically to make a searching inquiry into the things we have done and then from the lessons so learned lay future plans. It is in this spirit that we in the Navy await the coming years.

The primary duty of the Medical Corps of the Navy is to make all preparations humanly possible to keep the personnel healthy and able to perform their duties with minimum time on the sick list. The Navy is made up of the Fleet, with its supporting shore stations. It is reasonable then to say that every move made by the Medical Corps is in the direction of advancing the efficiency of the Fleet. We in the Navy have a precise problem. It takes years to build a battleship. It takes many months to build a destroyer. Consequently, we can plan ahead for the requirements that will be placed on us in caring for the personnel needed to man the ships that the Navy will have a year from today.

The Marine Corps is a small, compact, mobile outfit. Here again we are able to forecast in a definite measure what its needs will be a year from today.

When the present emergency came on us the Navy Medical Corps consisted of approximately eight hundred and seventy-five regular officers on active duty. It is not easy to procure unlimited increases for our service except in time of a national emergency. Today our Navy and Marine Corps consist of over three hundred thousand officers and men on active duty. Our medical officer strength is on a basis of sixty-five one-hundredths of 1 per cent of the entire officer and enlisted strength of the Navy. In view of this, two thousand medical officers will be necessary to care for the increased personnel already in prospect. How then are we to make up the apparent deficiency? The answer is simple but still difficult. It is from you, the medical profession of our country, and from the graduates of our class A schools that we turn for reenforcement. The Navy Medical Corps is

extremely desirous that nothing be done which will hinder the steady flow of medical education. I am glad to be able to tell you that the Secretary of the Navy is doing all possible to help in this regard.

It has been encouraging for us to receive the generous response and cooperation from the men in civil life who are members of the Medical Reserve Corps. We now have over five hundred of them on active duty. A number of them are in vital key positions. Except for a small number, who had obligated themselves for active duty whenever called, all gladly volunteered.

We have a Reserve of which we are proud. Included in it are our specialist units. Of these there are one hundred and eleven scattered through the length and breadth of the land. The purpose of these units, in time of war, is to move them into our hospitals, take over as the heads of departments and allow the regular officers to proceed on duty at sea. We are being careful not to disturb these units as yet. In a few instances some officers have requested active duty and this has been granted. They have been told, however, that in case of mobilization they will be relieved of the duty assigned them and returned to duty with their specialist unit.

In view of the rapid and ever changing type of warfare, the Navy is looking well ahead to make its medical services extremely mobile. We have organized, and will organize, more mobile neurosurgical units. These will be complete in every sense of the word and will be moved by air to any focal point when needed. We have also organized several mobile laboratory units. These will operate in the same manner. Our large type mobile base hospital has now passed the experimental stage. This is a hospital of five hundred beds and is able to carry on the work of any five hundred bed permanent institution. We learned a great deal in the setting up of the first unit, which at one time cared for over two hundred and forty patients in the Caribbean area. We plan by the end of this year to have four such hospitals ready for service at any point where they may be needed. We have the smaller hospital unit with our field forces. These are well equipped units of seventy-five beds each.

Consider the geographic distribution of the Navy's activities. The Medical Department is responsible for the health and sanitation of every station, whether it be in the Philippines, in the Caribbean, in Newfoundland or in Alaska.

The specialization that our Corps has carried out through the years in tropical diseases now stands us in excellent stead. We are glad to acknowledge at this time the splendid cooperation of the Rockefeller Institute. This fine organization has offered its services to both the Army and the Navy in the various foreign countries where they operate so well and where we may possibly go.

We are calling on the Public Health Service for aid and advice in many sanitary matters and are receiving it. We are indeed fortunate to be able to secure many men in civil life who are specialists in public health and preventive medicine for commissioning in our Reserve Corps. Several of these are now on duty in the Caribbean area.

Coming closer to the home situation, our industrial plants in navy yards are causing us considerable concern regarding procurement of the necessary medical officers who are properly prepared for duty in industrial medicine. There are not over twelve hundred men considered capable by the American Medical Association of carrying out the work in industrial medicine satisfactorily. A number of our large institutions have established excellent courses in this specialty which will add to the supply of specialists in this field. It is to be hoped that many men in civil life will take advantage of these courses, as the need will be enormous in not only the military and naval services but in our industrial sections as well.

The problem of ventilation is uppermost in our minds at this time. When we consider the present day form of warfare at sea, we know that every compartment on every ship must be ventilated at some time by artificial means. The stamina of fighting men will be tremendously impaired if they must rest or sleep in poorly conditioned compartments while waiting their turn to go on watch and take up the work where their companions left off. Air conditioning, as we know it, is not wholly satisfactory, and our complaint in the Navy is that all of the apparatus is too bulky and too heavy for our present use. Here is a problem that must be solved.

You might draw the conclusion from what I have said that our problems are insurmountable, but let me assure you they are not and that the health of the Navy today is splendid. On the brighter side of the picture we are carrying out the lessons we have learned from the research done by our various organizations in this country. The entire personnel of the Navy will be immunized against tetanus during the coming year. All personnel going into the tropics are being immunized against yellow fever. In our recruiting we are working along satisfactory lines in weeding out the mentally unfit. Our personnel coming into the Navy is being roentgenographed in an effort to screen out all tuberculous individuals. We are proceeding rapidly in the instruction of our medical officers and hospital corpsmen in the newer therapeutic measures of chemotherapy. We are profiting by the lessons learned abroad in the prevention of surgical shock. In this last condition there is much to be done, and here research is proceeding at a reasonable pace.

The Naval Medical Service has a wide and varied field. The work in our hospitals is not particularly different from that in civil institutions. There is no reason why it should be. Of course, our patients are under much better control than those in a civil hospital, for the individual is kept in the institution until he is fit to return to duty. Our Navy personnel knows that when a man is sick he can go to his doctor and receive immediate attention. He has no fear of doing this, for he knows that the sooner he reports the sooner he will be well and able to resume his duties. The average Navy enlisted man makes the finest patient a doctor could possibly wish for and is cooperative to the last degree. He is well indoctrinated in the reasons for preventive measures in sanitation and is instructed in the simpler methods of first aid. The attempt is made by these means to give the enlisted man information that will help him to understand why preventive measures are so necessary, since time on the sick list means disrupting various task organizations, such as gun crews. These men take tremendous pride in the excellence they are able to bring about by team organization.

The practice of medicine on board ship is a complex affair. The medical officer may be by himself with a crew of eight hundred to nine hundred men, hundreds of miles from any other ship. He must assume the responsibility for the medical and surgical care of his entire crew. This officer must be well grounded in the

problems of the diagnosis and treatment of disease. He must be able to do satisfactory emergency surgery and he must have a knowledge of military hygiene and sanitation.

Specialization is encouraged in the Navy but not until after the medical officer has had enough time to discover the problems that meet the doctor in general practice. We find that he makes a much better specialist. Once he has started in a specialty he is given every opportunity to continue in it, and when he comes ashore he is sent to a station where his specialty can be made use of. Frequent postgraduate instruction in civil institutions is provided for all our doctors. One thing, however, that must never be lost sight of is the fact that a doctor in the Navy Medical Corps must always be a specialist in military medicine.

Turning to the more highly specialized side of military medicine, we have an ever expanding field in aviation medicine. Here again the speed of our aircraft is forcing us into research. The matériel side is far ahead of the personnel. All are familiar with the fine work that has been done in solving the problem of the diver. By means of research we are now able to keep men at work for periods of twenty minutes or more at depths beyond 250 feet. We are turning that experience to excellent use in attempting to solve the problem of how a pilot can live above an altitude of 37,000 feet and function efficiently. The field of atmospheric hygiene is one which will call for all possible ingenuity that man can muster. We have the ever present problem of fatigue which is tied in with altitude flying. He who answers the question "What is fatigue?" will do man the greatest possible service. The Navy is in search of that answer.

So then the Medical Corps of the Navy adds to its varied fields the long neglected one of research. True we have done a certain amount, but it has never been well directed. We must turn to our civilian friends for help and guidance in this task. Speed is again essential. Time—there is not enough time to do the things that we need to do, but they must be done if our aviators are to succeed where others have failed.

The question of research and where it properly falls in national defense is now in the process of being solved. The military services must take a prominent place in this work, as many of the experiments must be carried out at army posts and on naval stations. Neither service has done enough in this important field to have well balanced research staffs. It is necessary then for the services to call in men from civil life who have given their lives to research and who know how to proceed so that time will not be wasted and results will be obtained without overlapping and confusion.

It is our idea that research in surgical shock should be carried out in many institutions at the same time. Experience gained by what has gone on in Europe helps us frame our program. The greatest difficulty to be faced over there is the lack of control of patients and a satisfactory follow-up system. We should have but little trouble along those lines and, given a few months to check carefully the cases under observation, some definite conclusions should be forthcoming. Here again I wish to emphasize the great need for speed; realizing, of course, that there is a great difference between haste and speed.

I have deliberately avoided the field of social hygiene. This much I can say: The Navy is cooperating in every way with state and local authorities wherever our activities are located. We are appreciative of the advice and help we are receiving from our civil organizations and from our committees set up by the Research Council.

So to the young doctor let me say that the Navy can offer a career where he can do as fine professional work as he has the desire to do. Every opportunity is given to the man who wishes to succeed. Make no mistake, the naval officer never becomes wealthy but his pay is adequate. There is a comradeship throughout our service that will give lasting pleasure to any who may join us. This may sound like boasting, but it is not. It is a sincere expression of one who counts hundreds of friends made through the years, and, regardless of how long the gap may be between contacts, the pleasure on meeting again is still as keen as in the beginning.

To the older men who may join our Reserve, in case of national emergency, we welcome you and count on the aid and experience that your many years in civil life will bring to us.

Our hope today is that the members of the American Medical Association will think of our Navy Medical Corps as an integral part of American medicine. It is our endeavor to see that you are not disappointed.

THE FUNCTION OF PUBLIC HEALTH IN DEFENSE

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We are meeting at a grave hour in our nation's history. Our Commander-in-Chief has laid on each of us the obligation to contribute our unlimited effort in this "unlimited national emergency." No group of equal size can do so much for the nation's safety as can the medical profession.

It becomes increasingly clear that this total war basically is a war of production. It is a war in which the totalitarian system of economics, no less than its political system, is pitted against the democratic. Unless we excel Nazi efficiency in our defense efforts, we shall not survive as a free people. Our machines are the best in the world. It is our task to make our men as good as our machines. In many skills we have already a shortage of manpower. To conserve and improve our manpower is a medical and public health task of national importance.

An obvious first point of attack against needless loss of manpower is in industry itself, particularly in the defense industries. Neal and Bloomfield of the Public Health Service have estimated that three hundred and fifty million man days were lost last year on account of illness and accident among industrial workers. This means more than one million men working for a full year. Not all of this loss can be prevented; but suppose we prevented 10 per cent of it—a conservative estimate—what would be the result in defense production? Based on data from the Bureau of Labor Statistics, showing the man-hours required to produce various kinds of war material, I have calculated that a 10 per cent reduction in industrial manpower losses from disability would build twelve cantonments of average size, or five battleships, or sixteen thousand, four hundred and seven combat tanks. And how urgently we need them now! Representative McCormack, of Massachusetts, recently made another comparison. He estimates that man-days lost to industry

last year on account of disability was fifty times as great as that lost on account of strikes and lockouts. We hear much about the latter but little of the former.

For a quarter century the Public Health Service has been studying health problems in industry, gaining the confidence of labor and management alike through the scientific dispassionateness of its findings. Since 1935 too we have aided thirty-six states to set up divisions of industrial hygiene. During the past year we have supplemented their work with fifteen teams of experts (a doctor, an engineer and, when needed, a chemist) to survey health hazards in war industries and prescribe corrective measures. Strong help is being given by the American Medical Association Council on Industrial Health under Dr. Seeger's chairmanship, and by Dr. Selby's Federal Subcommittee on Industrial Health and Medicine. This is a beginning, but only a beginning, toward the maximum industrial health efficiency which we must have.

In every war the venereal diseases have been a serious drain on military efficiency. We are much better prepared now than ever before to deal with this problem. With federal aid under the Venereal Disease Control Act of 1938 there are in operation more than three thousand treatment centers and more than two thousand diagnostic laboratories. Every state distributes free drugs to all physicians for the treatment of their patients. As a part of the physical examination of every recruit for the army under Selective Service, a serologic test for syphilis has been made. The state and city laboratories have done most of the work with federal aid. Never has this been done before in this or any other army. Among the first million men, 48,000 cases of syphilis have been found. Of these only 3 per cent show clinical syphilis. Among the second million draftees in the World War there was seven times this amount of clinical syphilis. In other words, in 1917 clinical syphilis caused the rejection of approximately ten thousand men; now the number is one thousand, four hundred and eighty-two per million.

The data are not yet complete on gonorrhea, but preliminary figures show only about one third as much now as in the first World War.

These facts are heartening but give no cause for complacency. Here are forty-eight thousand young men, otherwise able to serve their country, who are not exercising this privilege of free citizenship because of syphilis. Of particular concern is the fact that present treatment and follow-up machinery in many places has broken down under the strain of this added case load. If we have the will and the funds to deal aggressively with the infectious cases uncovered by Selective Service examinations, we can add thousands of men to the armed forces and advance by a decade control of the venereal diseases.

Other preventable diseases and correctable defects, uncovered by draft examinations, bring home to us for the second time the poor health status of our young men. General Hershey last week said that while more careful examinations may account for the apparent increase in some defects since the first World War—better examination for syphilis is an example—dental disabilities today definitely are greater than in 1917-1918. He estimates that poor nutrition accounts directly or indirectly for one third of the rejections.

As a nation what are we to do with this reservoir of manpower unavailable for the armed services? I urge that the government offer or, if necessary, require corrective treatment where it is indicated.

This is not, however, a fundamental approach to developing our maximum manpower. All signs point to a long war ahead. The public health and medical professions should draw the blueprints now for early nationwide action to put all our knowledge to work for the benefit of the nation.

Implicit in such a program is an equal opportunity for health. We Americans want good health to be the heritage of all, on as democratic a basis as the suffrage itself. We need this heritage now for the nation's safety. We shall need it later if we are to have the fruits of the peace we seek to win.

Until we put all our knowledge to work to provide an equal opportunity for health as the birthright of every American, we have small cause to boast that our medical education is the best in the world, that we have more and better hospitals, doctors, research institutions than any other country.

On one broad health front, blueprints for nationwide action were drawn last week in Washington, following months of preliminary work, at the National Nutrition Conference for Defense, called by the President. I commend to every doctor a careful study of them. Agriculture, science, industry, the professions and government, each has an important part. Time permits me to quote only a brief excerpt as to the goals:

> These broad recommendations are made as the basis for a national nutrition policy and an action program that can reach down to every community and if possible every individual in the land in the present emergency. But the conference also wishes to put on record its belief that such a policy and program have implications that go beyond the present emergency.
>
> There seems no reason to doubt, on the basis of present evidence, that just as, by the use of modern medical science, we have conquered diseases that took an enormous toll of life in the past, so by the use of the modern knowledge of nutrition we can build a better and a stronger race, with greater average resistance to disease, greater average length of life and greater average mental powers.
>
> This can be done by the conquest of hunger—not only the obvious hunger man has always known, but the hidden hunger revealed by the modern knowledge of nutrition.
>
> The United States is probably the best fed nation in the world today, but we cannot afford to judge ourselves by external standards. We should judge ourselves by the standard of our own potentialities—our resources in food, in technical developments, in scientific knowledge. By that standard we fall far short of our goal.
>
> No nation, certainly no great nation, has ever truly conquered hunger, the oldest enemy of man. Such an aim is not too high, such a goal is not too difficult, for the people of the United States. It is in line with our tradition of pioneering on new frontiers. It is a particularly fitting task for us in this day when democracy should point the way to a new and better civilization for oppressed peoples all over the earth.

The part of the Public Health Service in nutrition for defense illustrates a principle that is more characteristic of that service, I believe, than of any other governmental agency. We have certain definite legal functions, but many of our tasks, perhaps the more important ones, are shared with others. Our cooperative health work with the states is an example. The health program of the National Youth Administration is another. With the help of the Public Health Service, the National Youth Administration is providing health examinations and needed corrective medical care for a group of underprivileged youth who are being trained in defense skills and who will be liable to the draft in the next years.

In two hundred defense areas the sudden influx of workers or soldiers, or both, has produced health problems beyond the ability of the community to meet. Almost over night a village of a few hundred has a fifty-fold population increase. The state health departments and the Public Health Service have mobilized every available resource into these critical areas to meet elemental sanitation and disease control needs. There is still no federal help, however, for building the hospitals, the water supplies, the sewerage systems and schools, or for draining the malarious swamps. Yet three months ago the President asked that Congress authorize these community facilities.

Up to now we have adopted no adequate plan either to insure a continuing supply of doctors in the future or to utilize to best advantage the doctors we have. Modern war produces a shortage of many skills. This was obvious when I was in Great Britain. The skill in which they have the greatest shortage is that of the doctor. They have asked us for one thousand young American doctors. The President has endorsed their request. Yet we have not met this, an urgent British request for aid. Here is a concrete opportunity for American medicine. Do we dare fail?

To meet our own military and civilian needs for doctors will require careful rationing of our medical resources. We can do such national planning only through an official, responsible committee, which with the aid of state and local committees should decide the task for which each doctor is best fitted. The largest proportion of volunteers come from the rural areas, where they can least well be spared. Also defense work of understaffed health departments is being curtailed or stopped, because they are losing trained doctors, with no replacements to be had. Our military and naval forces number about two million. In this total war, the health care of the remaining one hundred and twenty-eight million is of equal importance.

Public health action stems from scientific knowledge welded in the laboratory of medical research. To research must action return for future guidance. In the future as in the past the greatest contributions of the Public Health Service lie in its research work. All of the energies of the National Institute of Health are being directed toward the solution of health problems of prime defense importance. Aviation medicine, new industrial health problems in war industries, typhus fever vaccination, protection against yellow fever, an improved chemotherapy for malaria are some examples. The aid of all our medical research centers is needed in a coordinated attack on those problems of importance alike to military and civilian efficiency. Through the Health and Medical Committee, under the wise guidance of Dr. Irvin Abell, such a coordinated attack has been started.

Recently I studied the problems of civil defense in Great Britain. Two weeks ago a civilian defense agency was created by the President. The British experience teaches us that health departments, with the aid of the medical profession, are at the heart and center of their gallant effort. You may be sure that our own health and medical profession soon will be called on for a large role in our own preparations.

These, then, are some of the functions of public health in total defense. Let us together perform them well.

There are historic moments in the life of every nation, as in the life of every individual. This is such a moment. We have passed the twilight of a day that is gone. One by one the lights of liberty have been extinguished in many lands. Few lights remain. But for America a new day is dawning. For it we shall need all the health and courage we can muster. We must be conscious of our destiny, of a potential power which no nation has ever held. How well we use it now may determine the course of our history. Our part—yours and mine—is to work as a united profession toward building our country's strength. Our nation expects much of us. We shall not fail.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THE ASSAY OF GONADOTROPINS AND OF GONADAL HORMONES

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This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of "Glandular Physiology and Therapy." The opinions expressed in this article are those of the author and do not necessarily represent the views of the Council.—ED.

As in other physical states, the goal of therapy in gonadal dysfunction is to reproduce a normal condition in an abnormal body. This requires quantitative knowledge of the normal concentration of the hormones concerned in the body tissues and fluids and quantitative knowledge of their concentration in the agents used for replacement. In both cases the development of suitable assay procedures is essential.

The problem is not simple. Biologic methods, with all their attendant difficulties, must still be used in assaying many of these principles. Metabolic processes may alter certain of the substances both chemically and biologically. Because the actions of the substances are multiple, a confusingly large number of methods, based on different responses, with correspondingly many units, have been proposed. The space available permits discussion of only a few of the problems, and the same limitation prevents reference to much of the enormous amount of work done.

GENERAL PROBLEMS INVOLVED IN BIOASSAYS

Criteria which determine the suitability of a biologic method of assay are:

1. Objectivity. The weight of an object is the same in one laboratory as in another, and therefore a good balance is more reliable than the most conscientious investigator's judgment.
2. Sensitivity. There should be a large increase in response following a small increase in dose; this obviously makes for greater accuracy.
3. Simplicity. When assays must be done frequently and expense is a consideration, a complicated or expensive procedure, no matter how accurate, will usually fail in practice.

From the University of Colorado (Dr. Gustavson) and the University of Denver (Dr. D'Amour).

4. Individual variation. The unfortunate property of test animals to differ greatly in their individual responses to drug or glandular treatment has been emphasized by every one engaged in assay work. The greater this variation, the larger the number of animals which must be employed.

These are the most fundamental factors. However, it is apparent, no matter which method is chosen, that all details of technic must be duplicated each time the assay is performed, in order that results may be reproducible. Such details are: type and age of animals, duration of injection period, route of administration, single or divided dose, menstruum, and purity of substance being assayed.

THE ASSAY OF GONADOTROPINS

Gonadotropins Concerned.—The gonadotropic preparations used clinically originate chiefly from three sources: the urine of pregnant women, the serum of pregnant mares and the anterior lobe of the pituitary. Large amounts of a gonadotropic substance are excreted by castrate and menopausal women, but this source has not been exploited commercially. Normal women throughout the midinterval of the menstrual cycle also excrete a gonadotropic substance similar to that found in castrate women, but the small amount renders this source unimportant. There is considerable agreement that the gonadotropin in the urine of pregnant women is entirely luteinizing, while that in the serum of pregnant mares is largely, if not entirely, follicle stimulating. Separation of anterior pituitary extracts into pure or nearly pure follicle-stimulating and luteinizing fractions has been accomplished, and some of the commercial preparations are nearly entirely follicle stimulating in effect. Hypophysectomized animals are essential in determining that the separation has been made.

Assay Methods.—Since no chemical methods are available, these are based on biologic responses. Suitable reactions are discussed in reference to the established criteria in the following paragraphs:

1. Increase in weight of seminal vesicles. This method is applicable to preparations of the gonadotropin in the urine of pregnant women and of that in pregnant mare's serum. It is completely objective; the sensitivity is moderate; with practice the process is simple, requiring not more than thirty seconds for dissection of the vesicles and a little more for weighing. The structures can be cleanly and completely removed. The individual variation, i. e., difference between the maximum and the minimum response on a given dose, is about 100 per cent.

2. Increase in weight of ovaries. This method is applicable to preparations of gonadotropins from all three sources and is completely objective. The sensitivity varies with the gonadotropin concerned, being low for that of pregnancy urine, low at low doses for that of pregnant mare's serum but higher with larger doses, and moderate for anterior pituitary gonadotropin. It is simple, with practice the ovaries can be cleanly and completely dissected, and the time required is little longer than for seminal vesicles. The individual variation is somewhat greater than with the seminal vesicle method.

3. Increase in weight of uteri. This method is applicable to all three types of gonadotropins; it is completely objective and about as easy as the previous ones. The great absolute weight of the uteri is an advantage, making exact weighing less important. The sensitivity is great, a six-fold increase in weight being obtained on either pregnancy urine or pregnant mare's serum preparations, with doses which will only double the weight of the seminal vesicles and hardly affect the ovarian weight at all. The individual variation is great, being in some studies 300 to 400 per cent, which makes the use of large numbers of animals necessary. One disadvantage is the fact that the weight curve reaches a maximum and then declines with larger doses.

4. Vaginal cornification. This method is the simplest and is applicable to preparations of gonadotropins from all three. It is reasonably objective, provided one sets as his standard a full estrus smear, i. e., the complete disappearance of leukocytes and their replacement by epithelial cells. The sensitivity is great and appears to parallel rather closely the uterine weight method.

5. Luteinization. This method is unsatisfactory in practically every respect. Unless microscopic sections are prepared, which takes time and labor, the degree of luteinization is difficult to determine; macroscopic examination fails on the score of objectivity. The method is insensitive and individual variation still rather great.

From the foregoing discussion the following conclusions may be drawn: Organ weight methods have the advantage of objectivity; however, the ovarian response is rather insensitive and the seminal vesicle response decidedly insensitive to anterior pituitary preparations. This leaves the uterine weight method as applicable to preparations of gonadotropins from all three sources and as being both objective and sensitive. Individual variation is great, but that is characteristic to some degree of all biologic assays. Vaginal cornification is simplest and reasonably objective with practice. Since both uterine weight and vaginal estrus can be determined simultaneously, i. e., on the same animals, a combination of the two might be employed. However, it must be remembered that both responses are also produced by estrogens, and the absence of the latter from the material being assayed must be assured.

Assay of Commercial Gonadotropins and Establishment of International Standards.—Several studies of commercial preparations have been reported.[1] Usually (less rarely with anterior pituitary preparations) it is found that these materials contain the biologic activity stated on the label to be present, according to the method of assay employed. However, all such studies emphasize the fact that no comparison of activity is possible because of the lack of uniformity of the assay methods employed. This situation has been measurably relieved by the establishment of international standards and the definition of international units for the gonadotropin in the urine of pregnant women[2] and that in pregnant mare's serum.[3] This improvement has resulted from the work of the Commission of Biological Standardization of the Health Organization of the League of Nations and is to be highly commended. For both substances, contributions from a number of laboratories were pooled and diluted to a proper concentration, the

1. D'Amour, F. E., and D'Amour, Marie C.: The Potency of Certain Commercial Hormone Preparations, Endocrinology **22**: 583 (May) 1938. Gaensbauer, Ferdinand, and Bradbury, J. T.: The Comparative Potency of Commercial A. P. L. Preparations, ibid. **24**: 867 (June) 1939. D'Amour, F. E.: The Potency of Certain Commercial Hormone Preparations: Second Study, ibid. **26**: 88 (Jan.) 1940. Goldman, S. F., and Cinberg, B. L.: The Potency of Pituitary Gonadotropins, ibid. **27**: 524 (Sept.) 1940.

2. Memorandum on the International Standard for the Gonadotrophic Substance of Human Urine of Pregnancy (Chorionic Gonadotrophin) Established by Department of Biological Standards, National Institute of Medical Research, Bull. Health Organ., League of Nations **8**: 884, 1939.

3. Memorandum on the International Standard for the Gonadotrophic Substance of Pregnant Mares' Serum Established by Department of Biological Standards, National Institute for Medical Research, Bull. Health Organ., League of Nations **8**: 898, 1939.

final product representing the International Standard Preparation. In the case of preparations of pregnancy urine gonadotropin, the international unit (I. U.) is defined as "the specific gonadotrophic activity of 0.1 mg. (100 gamma) of the standard preparation"; in the case of preparations of pregnant mare serum gonadotropin the international unit is 0.25 mg. of the standard preparation. In both cases the following recommendation for use of the standard preparation in biologic assays is made:

> The only tests for the comparative determination of gonadotrophic activity, in units as above defined, on which the Conference has evidence to justify recommendation, depend on:
> (*a*) The observation of a direct or indirect gonadotrophic effect, shown by morphological changes in the gonads;
> (*b*) The observation of secondary changes in the accessory reproductive organs, in animals not deprived of their gonads. When this type of test is used, the absence of substances directly causing such changes in the accessory reproductive organs should be assured by control tests on animals deprived of their gonads.

In more recent publications [4] the data obtained from the assay of materials making up the pools are submitted to statistical analysis. It is recommended that for preparations of pregnancy urine gonadotropin the vaginal cornification test be employed. No specific recommendation is made for preparations of pregnant mare serum gonadotropin.

The Council on Pharmacy and Chemistry of the American Medical Association has recommended the adoption of international units in expressing the potency of Council-approved preparations. It is desirable to know just how much biologic activity is represented by 1 international unit of either material and also how the activities of the two compare over a range of doses. In one such study [5] it was found that the biologic activity of 1 international unit of each was approximately the same, but at higher levels of dose the ovarian response was much greater with the gonadotropin of pregnant mare serum than with that of pregnancy urine.

As regards the anterior pituitary gonadotropin, the Commission of Biological Standardization has not felt that complete separation into follicle-stimulating and luteinizing fractions was sufficiently assured to warrant establishing international standards for materials from this source. Confusion will therefore continue to exist in respect to the activity and unitage of anterior pituitary preparations.

While the establishment of international units for preparations of gonadotropins from two of the three sources is no doubt a long step toward uniformity, it must not be supposed that this will solve the problem completely. Such standards have been used in estrogen standardization for several years. However, one still finds in the labels on well known commercial estrogenic preparations mention of "rat units," "active biological units" and "vaginal canalization units." Oral administration has also introduced a confusing factor in that a preparation containing the stated number of international units when assayed subcutaneously produces a much smaller biologic response when administered orally. Percutaneous administration presents a similar difficulty. Consideration must also be given to the possibility of deterioration on standing, as well as to variability of response with the use of different vehicles, i. e., aqueous vs. oil suspensions. Some of these, and no doubt other problems, may be anticipated in the gonadotropin sphere. Some clinicians do not yet recognize the fact that preparations of the gonadotropins come from three different sources and possess different properties, and the failure to establish international units for the anterior pituitary gonadotropins may, if the gonadotropins from the three sources are confused, reduce the value of the establishment of such units for the other two.

Summary.—Gonadotropins can be assayed only by biologic methods whose accuracy is dependent on careful control of many factors. Of the methods available, that of vaginal cornification appears to be the most highly recommended. International units have been established for the gonadotropin prepared from the urine of pregnant women and for that from pregnant mare's serum but not for the anterior pituitary gonadotropins. Although the establishment of international units has eliminated much confusion, the use of these units is no guaranty of uniformity of results in practice.

THE ASSAY OF GONADAL HORMONES

The development of reliable methods of assay has led to the isolation of estradiol (dihydrotheelin) from the follicle fluid of the sow,[6] progesterone from the corpus luteum of the sow [7] and testosterone from the testicle of the bull.[8] As a result of metabolic changes in the body, these primary principles are altered chemically and eventually are found in the urine as degradation products which in some instances are conjugated with glycuronic acid. These conjugated compounds, which are soluble in water and insoluble in most of the immiscible solvents, have lost much of their biologic activity. Androgenic and estrogenic conjugates occur in the urine of both sexes. The adrenal cortex may compensate for regression of gonadal activity by secreting androgens and estrogens.[9] These findings have complicated the problem of analysis and the task of interpretation.

Since crystalline estrogens, androgens and progesterone are available, biologic assays are necessary only to confirm the dosages stated on the labels of commercial preparations. So far as we know, clearcut distinctions have not been made in the clinical use of various estrogens and androgens. It is of course recognized that the greater solubility of estriol (theelol) in water affects the rate of absorption. The occurrence of these substances in the blood and urine has led to the hope that a quantitative determination of these products would be useful in furnishing more complete information about normal physiologic mechanism, provide a basis for the diagnosis of pathologic conditions and possibly offer a guide to therapy. It must be admitted that the task is difficult because of its complicated nature. Two general sorts of methods are used for the quantitative assay of these substances in blood and urine—biologic methods and chemical methods. Space does not permit a complete discussion of the details of these methods.

4. Emmens, C. W.: Analysis of Assays Carried Out in Various Laboratories on Contributions Offered Towards International Standard Preparation of Gonadotrophic Substance of Urine of Pregnancy, Bull. Health Organ., League of Nations **8:** 862, 1939. Emmens, C. W.: Analysis of Assays Carried Out in Various Laboratories on Separate Contributions Offered Towards International Standard Preparation for Gonadotrophic Substance of Pregnant Mare's Serum, ibid. **8:** 887, 1939.

5. D'Amour, F. E., and D'Amour, Marie C.: A Comparison of the International Gonadotrophin Standards, Endocrinology **27:** 68 (Jan.) 1940.

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7. Allen, W. M., and Wintersteiner, O.: Crystalline Progestin, Science **80:** 190 (Aug. 24) 1934.

8. David, K.; Dingemanse, E.; Freud, J., and Laqueur, E.: Ueber krystallinisches männliches Hormon aus Heden (Testosteron), wirksamer als aus Harn oder aus Cholesterin bereitetes Androsteron, Ztschr. f. physiol. Chem. **233:** 281, 1935.

9. Callow, Nancy H.; Callow, R. K., and Emmens, C. W.: 17-Ketosteroid, Androgen and Oestrogen Excretion in the Urine of Cases of Gonadal or Adrenal Cortical Deficiency, J. Endocrinol. **2:** 88 (May) 1940.

Urinary Estrogens.—Estrone (theelin) and estriol (theelol) are found in human urine almost entirely conjugated with glycuronic acid. The glycuronides must be hydrolyzed by acidifying the urine and heating before the estrogens can be extracted with immiscible solvents. Long boiling results in destruction of the estrogens. A compromise therefore has to be established between complete hydrolysis and minimum destruction.[10] Marrian [11] adjusted the p_H to about 1 and then heated the material in an autoclave at 120 C. for two hours.

Two biologic methods are used to assay these extracts for their total estrogenic content: the growth of the uterus of the immature rat or mouse; the growth of the uterus of the castrate rat or mouse. Bülbring and Burn [12] found that the increase in the weight of the uterus varies as the logarithm of the dose. Astwood [13] has proposed a six hour assay, which depends on the rapid imbibition of water by the uterus of the immature rat during the first six hours the animal is under the influence of an estrogen. The vaginal smear method of Allen and Doisy is more generally used. The accuracy of this method of assay has been studied carefully.[14] By direct application of the preparation to the vagina, Lyons [15] was able to detect $\frac{1}{2000}$ of a rat unit of estrone. Subcutaneous injections of divided doses of an aqueous solution or suspension have been used by most workers, although maximum absorption appears to be obtained by the intraperitoneal route. Unfortunately, the increase in sensitivity toward estrone and estriol with increase in the number of injections is not the same in the mouse. Emmens [14b] found that 7 micrograms of estriol gave a 50 per cent response when the substance was given in two injections, but that only 0.16 microgram was required when four injections were given during the same period. With estrone, 0.1 microgram gave a 50 per cent response with two injections, and 0.067 microgram gave the same response with four injections. It is therefore of the utmost importance to repeat various methods of assay for total estrogenic content in exactly the manner reported by the original author if the results are to be comparable. The observations also show that the separation of the different estrogens before assaying the extract would give much more fundamental data.

Substances which do not possess estrogenic activity will sometimes accentuate the activity of the estrogens, and therefore a crude preparation may exhibit greater activity than the pure estrogen.

Attempts to follow the day by day total excretion of estrogens have been made by a number of workers.[16] Two peaks of excretion occur, one at the midinterval, presumably related to ovulation, and the second following the activity of the corpus luteum.

The separation and purification of the various estrogens depend on dividing the extract into (*a*) acidic substances, which are extracted from an ether solution with sodium carbonate, (*b*) stronger phenolic substances, which are extracted from the ether solution with tenth-normal sodium hydroxide, and (*c*) weaker phenolic substances, which are extracted from the ether solution with normal sodium hydroxide.

Colorimetric Assays.—In view of the time, expense and inherent difficulties in biologic assays, colorimetric reactions are being studied. Absorption spectra may be used for the qualitative detection of the estrogenic and androgenic substances and are useful as a supplementary aid in the quantitative estimation of these substances. Callow and co-workers [17] indicated the value of spectrum analysis in pointing out that colorimetric estimation can replace the biologic assay provided due regard is given to the occasional presence of interfering compounds, which may be revealed when the absorption spectrum is examined. These workers studied and determined the absorption spectrums of seventeen androgenic and estrogenic substances or immediately related compounds.

A second method is the development of color through specific reactions and the comparison of this color with a standard, using the photoelectric colorimeter with carefully chosen filters.

Voss [18] studied the color reactions of estrogens with 1-nitroso-2-naphthol. The color obtained depends on the estrogen used. Schmulovitz and Wylie [19] used the orange color developed when the estrogens are coupled with diazotized p-nitroaniline. David [20] noted a typical blue color when estriol crystals were treated with sulfuric acid followed by arsenic acid. The reaction lacks sensitivity and cannot be used with impure extracts, since, according to Pincus and collaborators,[21] a bluish cloudy suspension always occurs.

Perhaps the earliest work on colorimetric determination of the sex hormones was that by Kober,[22] in which

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he used equal parts of concentrated sulfuric acid and phenolsulfonic acid in reaction with estrone. Cohen and Marrian [23] found it necessary to modify this method. The variation in tint of the final color makes it necessary to use a Lovibond tintometer to analyze and determine separately the intensities of the components. The authors expressed the belief that the estrone and estriol present in human pregnancy urine may be separated and estimated with a reasonable degree of accuracy by their modification of the Kober reaction. The separation of the estrone and estriol is not quantitative but is sufficiently complete to permit detection of any abnormal amounts of either compound in pregnancy urine. With "synthetic urines" of known estrone and estriol content, they observed a 13 per cent loss of estriol but a nearly quantitative recovery of estrone. Their work showed the necessity of removing pregnandiol and cholesterol.

Pincus and co-workers [21] used the phenosulfonic acid colorimetric method and obtained reliable results with the estrone and estriol fractions of human pregnancy urine. Their results check particularly well with those of biologic assays on urines from women in the sixth to ninth months of pregnancy, though the estrone fraction even in late pregnancy may give "over estimates."

Venning and co-workers [24] modified the method of Cohen and Marrian and attained an accuracy of ± 5 per cent when 5,000 micrograms of estrogens was present per liter of urine. They obtained poor results from early pregnancy and nonpregnancy urines, in which the estrogens are present in relatively small amounts. They used a photoelectric colorimeter in making their measurements.

Bachman [25a] used a diluted sulfonic acid reagent and carried out the reaction at 150 C. He found that the use of the modified reaction made feasible an examination of the chromogenic properties of estrogen, α-estradiol, and estriol and established conditions under which the total content of a mixture of these three may be determined.

Bachman [25b] developed a new reaction for estriol. This estrogen is heated at 150 C. with sodium paraphenolsulfonate in phosphoric acid. A stable violet pink color is obtained.

Hormones from the Corpus Luteum.—Progesterone, the secretion of the corpus luteum, is reduced from a diketone to a dihydroxy compound called pregnandiol, which occurs in normal and pregnancy urine conjugated with glycuronic acid. It is difficult to prove the presence of progesterone in blood or urine. Venning has shown that it is possible to determine the quantity of pregnandiol with a fair degree of accuracy.[26] Pregnandiol occurs in increasing quantities in the urine following ovulation and disappears just previous to menstruation.[27] During the first two months of pregnancy the excretion remains on the level of the luteal phase of the cycle, then rises until a maximum is attained, in the eighth month, and falls abruptly before parturition.[28]

Urinary Androgens.—The practical biologic methods of assaying androgens are limited to the growth of the comb in the capon and the increase in the weight of the seminal vesicle in the rat or the mouse. Since the androgens occur in conjugated forms, it is necessary to hydrolyze the urine before extracting with immiscible solvents. Here the period of boiling must be limited to fifteen minutes if losses by destruction are to be avoided.[29] The problem of assaying the crude extract from urine is fraught with many problems.[30]

The growth of the comb of the capon has been used for assaying androgens. The test may be made more sensitive if the material is applied directly to the comb, provided the estrogens are first removed, since they have an inhibiting effect on comb growth. Frank and Klempner,[31] Voss [32] and others have used the increase in weight of combs of baby chicks. The lack of a base line from which to measure is an objection to these methods.

The response of the seminal vesicle is so complicated that it is practically valueless as the basis of an assay method. Foreign substances, not in themselves androgenic, augment the effect of androgens present, as shown by many workers.[30a] These so-called x substances do not affect comb growth.

In the early work on the testicular hormone it was assumed that the androgenic material which could be extracted from normal urine was "the male hormone" and that the biologic assay of urinary extracts would give an index to the level of testicular secretion. However, androgenic activity is not specific to one substance, and at least two related compounds with androgenic activity, androsterone and transdehydroandrosterone, are present in the mixture of neutral compounds which can be prepared from urine. Further, these two compounds occur in the urine of both sexes. This distinction between hormones and excretory transformation products is confirmed by the discovery that testosterone is degraded in the human body to give androsterone and the stereoisomeric, inactive compound aetiocholan-3(α)-ol-17-one.[33] Androgenic substances in the urine may be derived from the adrenal cortex, since quantities of androgens and related steroids have been isolated from the urine in cases of adrenal disease.[34] For these reasons, the comb growth-promoting activity of urinary extracts, which consist of a complex mixture of degradation products, may not be an index of the production of androgens. Zimmermann [35] investigated the colors produced when urinary extracts are treated with m-dinitrobenzene. This method is based on the nonspecific reaction between the $CH_2C{=}O$ group and m-dinitrobenzene in alkaline solution. The temperature, duration of reaction, alkalinity of the solution, relative amount of reactants and intensity of light to which the solution is exposed must be carefully controlled.[36] This reaction

23. Cohen, S. L., and Marrian, G. F.: A Critical Study of the Application of the Kober Colorimetric Reaction, Biochem. J. **28:** 1603, 1934.

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26. Venning, Eleanor H.: Gravimetric Method for the Determination of Sodium Pregnandiol Glucuronidate (an Excretion Product of Progesterone), J. Biol. Chem. **119:** 473 (July) 1937.

27. Venning, Eleanor H., and Browne, J. S. L.: Studies on Corpus Luteum Function: I. Endocrinology **21:** 711 (Nov.) 1937.

28. Browne, J. S. L.; Kenny, J. S., and Venning, Eleanor H.: The Corpus Luteum Hormone in Pregnancy, J. Clin. Investigation **16:** 678 (July) 1937.

29. Peterson, D. H.; Gallagher, T. F., and Koch, F. C.: The Effect of Acid Hydrolysis on the Yield of Androgenic and Estrogenic Activities from Human Urine, J. Biol. Chem. **119:** 185 (June) 1937.

30. (*a*) Allen, Edgar; Danforth, C. H., and Doisy, E. A.: Sex and Internal Secretions, ed. 2, Baltimore, Williams & Wilkins Company, 1939, p. 877. (*b*) Emmens.[14b]

31. Frank, R. T., and Klempner, E.: The Comb of the Baby Chick as a Test for the Male Sex Hormones, Proc. Soc. Exper. Biol. & Med. **36:** 763 (June) 1937.

32. Voss, H. E.: Die örtliche Wirkung von Sexualhormonen, Klin. Wchnschr. **16:** 769 (May 29) 1937.

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35. Zimmermann, W.: Colorimetrische Bestimmung der Keindrüsenhormone, Ztschr. f. Physiol. Chem. **245:** 47, 1936.

36. Baumann, E. J., and Metzger, N.: Colorimetric Estimation and Fractionation of Urinary Androgens, Endocrinology **27:** 664 (Oct.) 1940.

is given by a number of compounds of the 17-ketosteroid type. The color given in this reaction bears no relation to the biologic activity of the compound. It may be possible that the measure of these ketosteroids, the biologically active and the inactive, may be of more significance than an assay of biologically active urinary androgens. Wu and Chou [37] applied the reaction to a large series of urines. Callow and co-workers [17] showed close spectographic similarity of the colors given by neutral fractions of urinary extracts and by pure compounds. Comb growth–promoting activity of urinary extracts, expressed in terms of the international standard, is only roughly proportional to the content of 17-ketosteroid compounds.

Androgens and Estrogens in Blood.—Androgens occur in the blood in such minute quantities that quantitative assays at the moment seem impossible. Attempts to assay the estrogen content of blood have been the subject of a number of papers. While some progress has been made, the limited quantity of blood which may be drawn for analysis and the small quantity of estrogen to be assayed make this problem even more difficult than the analysis of urine.

Summary.—It is obvious from the foregoing considerations that a great deal of research must be carried on before a satisfactory solution will be obtained to the problem of the analysis of urine and blood for sex hormones.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

THEODORE G. KLUMPP, M.D., Secretary.

PRESENT STATUS OF ACETYL-BETA-METHYLCHOLINE CHLORIDE, MECHOLYL CHLORIDE-MERCK

(Formerly Mecholin-Merck)

A preliminary report of the Council on Pharmacy and Chemistry on acetyl-beta-methylcholine (Mecholyl-Merck) was published in 1935.[1] At that time the Council deferred consideration of the name Mecholin, under which the chloride salt of the base was originally submitted by Merck & Company. Subsequently this firm submitted the name "Mecholyl" to replace the previous proprietary name, and on the basis that the firm had rendered a service in making a pure preparation of this compound available and in facilitating the investigation of its applications the Council voted to accept the new proprietary name.

Since the publication of the preliminary report by the Council, many workers have investigated the value of acetyl-beta-methylcholine chloride in various conditions, and much additional information on the clinical use of the drug has become available. Starr [2] has extended his studies on the effect of acetyl-beta-methylcholine chloride in the cardiac arrhythmias. In a series of 25 attacks of paroxysmal tachycardia in 37 patients he observed that in 66 instances (88 per cent) the attack was brought promptly to an end when the drug was given. In one series of 50 attacks in 17 patients, Starr observed a stoppage of the attack in 58 per cent of the instances when a single dose of the drug alone was given. In 20 per cent of the attacks a second and usually a larger dose of the drug was required. Kovacs, Saylor and Wright [3] likewise observed a favorable effect of acetyl-beta-methylcholine chloride in this condition. In auricular flutter the clinical effects were uncertain [2] and in auricular fibrillation Starr found the drug to be without therapeutic value. For preventing attacks of paroxysmal tachycardia the drug was found to be inferior to quinidine.

The amount of acetyl-beta-methylcholine chloride required to terminate attacks of paroxysmal tachycardia varies with the age as well as with the weight of the patient. Starr [2] found that larger doses were usually required to stop an attack in older persons than in young ones. In patients under 52 years of age the subcutaneous administration of 30 mg. of the drug was usually sufficient, but in older patients this amount failed more often than it succeeded in restoring normal rhythm. In a patient aged 18 an attack was stopped by 10 mg., and the side effects were as intense as those which followed the injection of 50 mg. regularly required to stop attacks in a man aged 60. Page [4] likewise observed that young persons react to the drug more vigorously than do older ones.

Starr [5] has investigated the influence of other drugs on the action of acetyl-beta-methylcholine chloride. Digitalis in some instances appeared to increase the effect of acetyl-beta-methylcholine chloride on the heart, but experiments on animals gave no clearcut evidence of this effect.

Pines [6] found that the cardiac action of acetylcholine was increased by strophanthin in some animal experiments. An antagonism between the cardiac action of acetyl-beta-methylcholine chloride and of quinidine was observed by Starr.[7] He found also that acetyl-beta-methylcholine chloride failed to stop an attack of paroxysmal tachycardia in patients who were receiving quinidine.[5]

The various side actions of acetyl-beta-methylcholine chloride and the precautions to be observed in using this drug were discussed in the previous report by the Council.[1] Among the side effects are flushing of the face and neck, generalized sweating, salivation, a sense of pressure under the sternum, abdominal discomfort, slight fall in blood pressure and an increase in the pulse rate. In normal subjects these effects were usually observed within a minute after the injection of 20 mg. of the drug. The effect on the blood pressure and the increase in the pulse rate pass off in a few minutes and are usually followed by a pulse rate that is slower than before the injection. The other effects last for several minutes. Starr [2] advises that the patient be kept in the horizontal position during the time of action of the drug, as a fall in blood pressure is likely to cause fainting if the subject is in the upright position.

Several authors have cautioned against the use of acetyl-beta-methylcholine chloride in patients subject to asthma (Starr,[2] Kotkis [8]). In such subjects asthmatic attacks promptly follow injection of the drug. The use of acetyl-beta-methylcholine chloride in asthmatic subjects is therefore contraindicated.

It appears that in hyperthyroidism also considerable caution must be employed. Nahum and Hoff [9] found that acetyl-beta-methylcholine chloride converted the normal cardiac mechanism into auricular fibrillation in four patients with hyperthyroidism, whereas in normal subjects auricular fibrillation was never observed following the use of the drug.

37. Wu, H., and Chou, C. Y.: Colorimetric Methods for Determination of Sex Hormones in Human Urine, Chinese J. Physiol. **11:** 413 (May 15) 1937.

1. Acetyl-Beta-Methylcholine and Mecholyl (Mecholin)-Merck, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **105:** 281 (July 27) 1935.

2. Starr, Isaac, Jr.: Acetyl-Beta-Methylcholine: IV. Further Studies of Its Action in Paroxysmal Tachycardia and in Certain Other Disturbances of Cardiac Rhythm, Am. J. M. Sc. **191:** 210 (Feb.) 1936; On the Treatment of Paroxysmal Tachycardia and Certain Other Disturbances of Cardiac Rhythm by Acetyl-Beta-Methylcholine, Tr. A. Am. Physicians **50:** 289, 1935.

3. Kovacs, Joseph; Saylor, L. L., and Wright, I. S.: The Pharmacological and Therapeutic Effects of Certain Choline Compounds; Results in the Treatment of Hypertension, Arthritis, Organic Occlusive Vascular Disease, Raynaud's Disease, Scleroderma and Varicose Ulcers, Am. Heart J. **11:** 53 (Jan.) 1936.

4. Page, I. H.: A Syndrome Simulating Diencephalic Stimulation Occurring in Patients with Essential Hypertension, Am. J. M. Sc. **190:** 9 (July) 1935; Acetyl-Beta-Methylcholine (Mecholin): Observations Concerning Its Action on the Blood Pressure, Skin Temperature and the Heart as Exhibited by the Electrocardiogram of Hypertensive Patients, ibid. **189:** 55 (Jan.) 1935.

5. Starr, Isaac, Jr., footnotes 2 and 7.

6. Pines, L.: L'action de l'acétylcholine et du vague sur le coeur après administration de quelques poisons agissant sur le vague cardiaque, Arch. internat. de pharmacodyn. et de thérap. **49:** 91 (Oct. 31) 1934.

7. Starr, Isaac, Jr.: A Note on the Antagonism Between the Cardiac Action of Acetyl-Beta-Methylcholine and Acetyl Choline and That of Quinidine, J. Pharmacol. & Exper. Therap. **56:** 77 (Jan.) 1936; Acetyl-Beta-Methylcholine: III.[10]

8. Alexander and Kotkis.[13] Kotkis and Melchionna.[14]

9. Nahum, L. H., and Hoff, H. E.: Auricular Fibrillation in Hyperthyroid Patients Produced by Acetyl-Beta-Methylcholine Chloride with Observations on the Role of the Vagus and Some Exciting Agents in the Genesis of Auricular Fibrillation, J. A. M. A. **105:** 254 (July 27) 1935.

It was pointed out in the previous report by the Council that the intravenous administration of acetyl-beta-methylcholine chloride is dangerous. Starr [2] reports one instance in which 30 mg. of the drug was given intravenously in error. Among the marked effects was a complete stoppage of the heart for seventy seconds. In another instance there was a prolonged cardiac arrest when the drug was given intravenously. As indicated previously,[1] many of the undesirable effects of acetyl-beta-methylcholine chloride can be abolished or prevented by the injection of atropine. On the other hand, the effects can be intensified or prolonged by massaging the site of injection. Starr [10] has recommended that, in cases in which an injection has failed to arrest an attack of paroxysmal auricular tachycardia, the site of injection may be gently massaged and then, after a wait of twenty minutes to ascertain the effect of delayed absorption, a second injection may be given. This procedure not only may aid in the total utilization of the first dose but also may tend to prevent the possibility of cumulative effects of a subsequent injection.

Starr [2] observed no evidence to suggest that harm may result from the prolonged use of acetyl-beta-methylcholine chloride; on the other hand, Heinlein [11] was able to produce definite anatomic changes in the blood vessels of rabbits given repeated doses of acetylcholine for long periods of time. The vessels of the heart and lungs especially were involved. The amounts of acetylcholine used in these experiments were much greater than are likely to be given when the drug is used clinically; yet the findings suggest that the prolonged administration of large amounts of the drug might not be without some danger.

The effects of acetyl-beta-methylcholine chloride administered by ion transfer (iontophoresis) have been studied by many workers. Rutenbeck [12] found that several choline derivatives, including acetyl-beta-methylcholine chloride, may be introduced into the human body by this method. Alexander and Kotkis [13] showed that the perfusate of the limb of an experimental animal treated by ion transfer (iontophoresis) of the drug contained a substance having the physiologic properties of acetyl-beta-methylcholine chloride.

On administering the drug by ion transfer (iontophoresis) Kotkis and Melchionna [14] were able to produce the same general effects as by subcutaneous injection. Kovacs, Saylor and Wright [3] have confirmed these observations. Abel [15] found that acetyl-beta-methylcholine chloride given by ion transfer (iontophoresis) increases the capillary flow as evidence by increased redness of the area treated. He used the drug in 51 cases of osteoarthritis, rheumatoid arthritis, myositis and neuritis and observed relief from symptoms in most instances.[16] Boyd, Osborne and Markson [17] similarly observed beneficial effects of the drugs in patients with chronic arthritis. Kovacs [18] obtained encouraging results in 90 per cent of the patients with rheumatoid arthritis whom he treated. He attributed this effect of the drug to the increase in the peripheral blood supply. The results in patients with osteoarthritis were less satisfactory. Mathae [19] administered acetyl-beta-methylcholine chloride to 73 patients with arthritis. In the patients with the atrophic type of arthritis, symptoms were relieved in 73 per cent; in the hyperthrophic form of the disease satisfactory results were observed in 57 per cent of the cases. Ewerhardt [20] also believes that acetyl-beta-methylcholine chloride is of considerable value in decreasing the pain and swelling of the affected joints in patients with arthritis. On the other hand, Nagelschmidt [21] and Kling [22] found histamine phosphate given locally more effective than acetyl-beta-methylcholine chloride in the treatment of arthritis.

Present evidence indicates that acetyl-beta-methylcholine chloride when given by ion transfer (iontophoresis) exerts a systemic as well as a local effect. It does not indicate accurately the degree of absorption or the effect which can be expected from the local application.

Kovacs, Saylor and Wright [4] have used acetyl-beta-methylcholine chloride by ion transfer (iontophoresis) in the treatment of various ulcers. In 9 patients, rapid and complete healing of the ulcers followed treatment. In 12 patients with Raynaud's disease, these authors observed increased warmth and improved color of the hands and feet affected, following the use of the drug by local ion transfer (iontophoresis). Starr had previously found that acetyl-beta-methylcholine given by mouth did not prevent or alleviate the spasm when the extremity was exposed to severe cold. The drug appeared, however, to have some beneficial effect in spasm following moderate exposure. Goldsmith [23] gave large doses of acetyl-beta-methylcholine chloride by mouth and noted that an average maximal rise in temperature of the digits of over 5 degrees C. The vasodilator effect of the drug varied tremendously with different patients and in different pathologic conditions. In peripheral vascular disease with organic changes (arteriosclerosis, thromboangiitis obliterans and emboli) Kovacs, Saylor and Wright were unable to observe any therapeutic effect. Starr also failed to note any definite improvement in symptoms when acetyl-beta-methylcholine chloride was given in 4 cases of the occlusive type of peripheral vascular disease. Acetyl-beta-methylcholine chloride has been used for its parasympathetic effects in several other conditions. Most of the literature covering these observations was reviewed in the previous report of the Council. It was indicated at that time that the cases studied were too few in number and that adequate controls were lacking in most of the reports. The reported observations of Gernon, Ewert and Herrold [24] and of Palmer and McKenna [25] on the use of acetyl-beta-methylcholine chloride in patients with urinary bladder dysfunction secondary to tabes and multiple sclerosis should be confirmed in a larger series of cases. Horn [26] and Langworthy [27] also consider the drug to be beneficial for such patients, but further observations should be made to establish the value of acetyl-beta-methylcholine chloride in these conditions.

SUMMARY

The data available at this time suggest that acetyl-beta-methylcholine chloride is of value in certain instances of paroxysmal tachycardia. For selected patients in whom an attack of paroxysmal tachycardia cannot be terminated by other methods, such as carotid sinus pressure, the use of the drug would appear to be indicated. It should be realized that acetyl-beta-methylcholine chloride is capable of causing prompt and severe reactions. Therefore the smaller doses should be tried first, and the drug must never be given intravenously. Massage of the site of the injection should be used with great caution, if at all, as this procedure can increase or prolong the action of the drug. It has been recommended that gentle massage of the site of an initial subcutaneous injection which has failed to

10. Starr, Isaac, Jr.: Acetyl-Beta-Methylcholine: III. Its Action on Paroxysmal Tachycardia and Peripheral Vascular Disease with a Discussion of Its Action in Other Conditions, Am. J. M. Sc. **186:** 330 (Sept.) 1933.

11. Heinlein, H.: Organveränderungen durch körpereigene kreislaufwirksame Substanzen, Verhandl. d. deutsch. path. gesellsch. **29:** 93, 1936.

12. Rutenbeck, H.: Studien über die Elektrophorese mit Cholinderivaten, Klin. Wchnschr. **15:** 437 (March 28) 1936.

13. Alexander, W. F., and Kotkis, A. J.: The Properties of the Physiologically Active Substance in the Body Resulting from the Administration of Acetyl-Beta-Methylcholine Chloride by Iontophoresis, J. Pharmacol. & Exper. Therap. **58:** 439 (Dec.) 1936.

14. Kotkis, A. J., and Melchionna, R. H.: Physiologic Effects of Acetyl-Beta-Methylcholine Chloride by Iontophoresis, Arch. Phys. Therapy **16:** 528 (Sept.) 1935.

15. Abel, Oliver, Jr.: The Use of Mecholyl in Arthritis, J. Missouri M. A. **32:** 351 (Sept.) 1935.

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17. Boyd, Douglas; Osborne, S. L., and Markson, D. E.: Observations on the Use of Acetyl-Beta-Methylcholine in Chronic Arthritis, Ann. Int. Med. **10:** 728 (Dec.) 1936.

18. Kovacs, Richard: Newer Developments in Physical Therapy of Chronic Arthritis, M. Rec. **142:** 323 (Oct. 2) 1935.

19. Mathae, G. H.: The Treatment of Arthritis with Mecholyl Iontophoresis, J. Missouri M. A. **33:** 303 (Aug.) 1936.

20. Ewerhardt, F. H., in discussion on Mathae.[19]

21. Nagelschmidt, Franz, in discussion on Kotkis and Melchionna.[14]

22. Kling, D. H., in discussion on Kotkis and Melchionna.[14]

23. Goldsmith, G. A.: The Effectiveness of Acetyl-Beta-Methylcholine Given by Mouth as a Vasodilating Agent, Ann. Int. Med. **9:** 1196 (March) 1936.

24. Gernon, J. T.; Ewert, E. E., and Herrold, R. D.: The Use of Acetyl-Methylcholine in the Treatment of Neurogenic Bladder and Allied Conditions, M. Rec. **141:** 141 (Feb. 6) 1935.

25. Gernon, J. T.; Palmer, E., and McKenna, C. M.: Some Recent Developments in the Treatment of Neurogenic Dysfunction of the Bladder: Based on Cystometry, J. Urol. **35:** 515 (May) 1936.

26. Horn, K. W.: Mecholin (Acetyl-Beta-Methylcholin) as an Adjunct to the Treatment of Certain Types of Atonic Urinary Bladder, Univ. Hosp. Bull., Ann Arbor **1:** 3 (March) 1935.

27. Langworthy, O. R.: A New Approach to the Diagnosis and Treatment of Disorders of Micturition in Diseases of the Nervous System, Internat. Clin. **3:** 98 (Sept.) 1936.

arrest an attack of paroxysmal auricular tachycardia may be done to aid in the total utilization of the first dose and in the prevention of the possible cumulative effect of a subsequent injection, and that, after a wait of twenty minutes, a second injection may be given. For patients subject to asthma or for very ill patients in whom the severe side reactions may be dangerous, the use of acetyl-beta-methylcholine chloride is contraindicated.

In the treatment of chronic rheumatoid arthritis the administration of mecholyl chloride by ion transfer (iontophoresis) has been shown to exert a palliative effect in many cases. The application of this method for administration of the drug in some cases of chronic ulcers, Raynaud's disease and other vasospastic conditions of the extremities was also considered carefully by the Council. The Council later voted to reject this method of application of mecholyl chloride because of possible dangers involved in the method of ion transfer (iontophoresis). After further discussion and consideration of a series of opinions on the subject, however, the evidence for the application of such a method seemed to warrant the recommendation that the matter be studied further by the Council on Physical Therapy. The report by that council was adopted by the Council on Pharmacy and Chemistry, which then voted that Mecholyl Chloride (Merck & Company, Inc.) be accepted for inclusion in N. N. R., provided the firm's claims are limited to its use only in the treatment of certain instances of paroxysmal tachycardia by subcutaneous administration, in the palliative treatment of chronic rheumatoid arthritis by the method of ion transfer (iontophoresis) only, and in the treatment of chronic ulcers, Raynaud's disease, scleroderma and other vasospastic conditions of the extremities, preferably by the method of ion transfer (iontophoresis) but also by oral or subcutaneous administration when the former cannot be employed; and provided the firm includes in its advertising material and labels a caution statement that the method of ion transfer (iontophoresis) be employed only by those especially trained, and other warnings applicable to the different modes of administration as indicated farther on.

The Council found that sufficient published clinical evidence to support the claims for the use of mecholyl chloride in bladder dysfunction, abdominal distention, atonic constipation, pelvic inflammation, functional dysmenorrhea, atrophic rhinitis and glaucoma was not available at the present time. It was therefore indicated that these claims for mecholyl chloride could not be permitted and that the equivalent of the following list of warnings, as included in the conditions to its acceptance as already noted, be required to appear in all the firm's advertising of this product: (*a*) Never administer intravenously because of the danger of cardiac arrest. (*b*) Consider asthma, hyperthyroidism and any severe illness as contraindications. (*c*) Avoid massage at the site of injection, except when this may be necessary to determine when a further injection is needed, and then only gently, with due caution. (*d*) Advise recumbence during subcutaneous administration to avoid possible fainting. (*e*) By the method of ion transfer (iontophoresis) mecholyl chloride should be administered only by those who have been specially trained and should not under any circumstances be applied directly over ulcers or open wounds and only with care over scar tissue. Extreme care is necessary to prevent burns by galvanism. (*f*) Prolonged therapy with mecholyl chloride by any route is inadvisable and is contraindicated when grave side reactions occur.

It was further stipulated that the equivalent of the nine "Safety Rules in Galvanism" of Kovacs[28] be included in all advertising concerned with the technic of ion transfer (iontophoresis).

The foregoing report (now slightly revised) was transmitted to the firm and it has agreed to restrict its advertising claims for the drug to the uses recognized by the Council and has taken steps to meet the conditions required to make its product acceptable for N. N. R. In the meantime, pending fulfilment of these conditions, the Council voted to publish this further report on the status of the preparation.

28. Principles and Practice of Physical Therapy, vol. 3, chapter 9, pp. 10-11.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPP, M. D., Secretary.

IMMUNE GLOBULIN (HUMAN) (See New and Nonofficial Remedies, 1940, p. 437).

Parke, Davis & Co., Detroit.

Immune Globulin (Human).—A sterile, concentrated and refined human globulin obtained from human placental blood and tissue of healthy mothers whose blood and that from the cord gives a negative Wassermann reaction. The placentas are shredded and all extracted with saline containing sodium ethyl-mercuri-thiosalicylate. The globulin is fractionally salted out and dialyzed so as to obtain the immune factor or factors against measles, relatively free from extraneous material. Each lot is standardized on the basis of milligrams of nitrogen per cubic centimeter. The diphtheria antitoxin content of each lot is determined. Sodium ethyl-mercuri-thiosalicylate (0.01 per cent is used as a preservative. Tested for sterility according to methods outlined by the National Institute of Health. Marketed in packages of 2 cc. and 10 cc. rubber-capped vials.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1940, p. 528, under Thiamin Chloride).

The following dosage forms have been accepted:

Pulvoids Thiamine Hydrochloride, 1 mg.: Each pulvoid contains 1 mg. of thiamine hydrochloride equivalent to 333 U. S. P. units.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 6.66 mg. per cc., 1 cc. ampuls: Each cubic centimeter contains 6.66 mg. of thiamine hydrochloride, equivalent to 2,220 U. S. P. units, in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 6.66 mg. per cc., 10 cc. vials: Each cubic centimeter contains 6.66 mg. of thiamine hydrochloride, equivalent to 2,220 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 6.66 mg. per cc., 30 cc. vials: Each cubic centimeter contains 6.66 mg. of thiamine hydrochloride, equivalent to 2,220 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 10 mg. per cc., 1 cc. ampuls: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 10 mg. per cc., 10 cc. vials: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 10 mg. per cc., 30 cc. vials: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 33.33 mg. per cc., 1 cc. ampuls: Each cubic centimeter contains 33.33 mg. of thiamine hydrochloride, equivalent to 11,100 U. S. P. units, in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 33.33 mg. per cc., 10 cc. vials: Each cubic centimeter contains 33.33 mg. of thiamine hydrochloride, equivalent to 11,100 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 33.33 mg. per cc., 30 cc. vials: Each cubic centimeter contains 33.33 mg. of thiamine hydrochloride, equivalent to 11,100 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 50 mg. per cc., 1 cc. ampuls: Each cubic centimeter contains 50 mg. of thiamine hydrochloride, equivalent to 16,667 U. S. P. units, in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 50 mg. per cc., 10 cc. vials: Each cubic centimeter contains 50 mg. of thiamine hydrochloride, equivalent to 16,667 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

Hyposols Solution of Thiamine Hydrochloride Crystals, 50 mg. per cc., 30 cc. vials: Each cubic centimeter contains 50 mg. of thiamine hydrochloride, equivalent to 16,667 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Drug Products Co., Inc., Long Island City, New York.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 19, 1941

THE NATIONAL SCIENCE FUND

The National Science Fund, recently created under the auspices of the National Academy of Sciences, is a new and unique type of foundation for research that deserves the attention of the medical profession. The National Science Fund begins by creating machinery to receive and administer gifts for the advancement of science. Through its new procedure the great facilities of the National Academy of Sciences and its agency, the National Research Council, are placed at the disposal of those who wish to give to science. A center is thus provided to which any one may go to obtain competent impartial guidance in making an investment in science. The joint board of directors of the fund is made up of scientists selected from the membership of the academy and distinguished laymen. The new organization is prepared either to receive and administer large or small gifts or to act as an advisory group in a consultant capacity to any person or organization interested in making effective contributions to the support of science. The fund does not plan to carry on research of its own but will work through existing agencies.

Because it is affiliated with the National Academy of Sciences, the National Science Fund has the opportunity of playing a most important part in the scientific development of this country. In addition to its important task of contributing to the general support of the natural and biologic sciences, it has the facilities for locating and defining backward fields or problems in science which should receive support but which have hitherto been neglected. Efforts of the National Science Fund to assure continued and increasing support for fundamental science should be welcomed by the medical profession.

The organization of the National Science Fund resulted from a three year study of the present sources of financial support for fundamental research in science. Under the chairmanship of Dr. Albert F. Blakeslee, former president of the American Association for the Advancement of Science, a committee of academy members with the aid of a grant from the Carnegie Corporation of New York completed a survey of existing foundations and research funds. The survey showed the urgent need for additional funds for the support of science and suggested the advisability of establishing a permanent mechanism which would guarantee, as far as humanly possible, wise application of such funds as might be received. Basing its conclusions on this survey, the committee recommended to the National Academy of Sciences that the National Science Fund be created to assist in continued support of research in science and to provide unknown donors, at unknown times and in unknown places, a means through which they might make investments in science of enduring usefulness.

Members of the medical profession are often asked to advise prospective donors who wish to make effective and enduring contributions to medical science. The National Science Fund offers an advisory center to which any donor can be referred for authoritative assistance in making a wise and satisfying investment in the advancement of science.

THE ELECTRON MICROSCOPE

The progress of bacteriology was favored by the providential fact that pathogenic bacteria are within the limits of visibility of the present day microscope. For some time, however, it has been known that the sizes of micro-organisms extend far beyond the limits of visibility of light microscopes. Now comes the electron microscope, which extends the observation range by a factor of about fifty to one hundred. Electron microscopy, according to Marton,[1] of the R. C. A. Research Laboratories, is based on the discovery of geometrical optics for electrons similar to the optics of light. An electric or magnetic field of rotational symmetry acts on an electron beam as a lens; that is, the electron beam is concentrated or made divergent in the same way in which the light beam is acted on by the glass lens. It has been proved mathematically that the laws of geometrical optics can be fully applied to such systems and experimentally that electronic images may be obtained which can be made visible on a fluorescent screen. An image can be formed of any self-emitting object, as would be the case with light if we observed the image of the source itself, or we can illuminate an object in the same way as we illuminate one in a light microscope and observe the image of the object with the help of the illuminating beam. The next step, according to Marton, was the building of compound optical systems corresponding to the compound microscope. The light source of the light microscope is replaced by an electron source, the electron beam being concentrated on the specimen by means of the first field in the same way in which the light beam is concentrated by means of a condenser lens. Since the electrons travel only

1. Marton, L.: The Electron Microscope: A New Tool for Bacteriological Research, J. Bacteriol. **41**: 397 (March) 1941.

in a vacuum, the microscope must be pumped out to a high degree. The great advantage of an electron optical system lies in its highly increased resolving power. The mechanism of image formation is different from that in the light microscope. In the latter we see the image due to differences in absorption or refraction in the specimen. In the electron microscope the image formation is due to scattering of the electrons. The usual technic of preparing bacteriologic specimens for electron microscopy is to suspend them in distilled water and to allow a small drop of this suspension to dry on the film surface. The object is placed on a nitrocellulose film less than a millionth of an inch in thickness, which is stretched over a small disk of fine wire cloth. Staining has not yet been applied in electron microscopy. The final image has a magnification up to twenty-five thousand. Added detail may be brought out on the plates thus obtained by photographic enlargement, bringing the total magnification up to a hundred thousand.

Stanley and Anderson [2] studied purified preparations of five viruses by means of the electron microscope. The electron micrographs of the ultracentrifugally isolated tobacco mosaic virus showed a predominating unit of 15 millimicrons in width and 280 millimicrons in length, representing presumably single particles of this virus, together with aggregates formed by the end to end and side to side aggregation of this unit and a small amount of rods having shorter lengths.

Taking advantage of the fact that the electron microscope is capable of recording the sizes, shapes and reactions of protein molecules, the same authors [3] attempted a study of certain immunologic reactions with the electron microscope. They obtained micrographs of a mixture of virus and rabbit serum. The virus particles retained their normal size, indicating that little or no adsorption of particles from normal serum on to the virus molecules has taken place. A mixture of tobacco mosaic virus and tobacco mosaic virus antiserum from rabbits, when dried on a collodion film and examined by means of the electron microscope, showed particles about 60 millimicrons wide, about 300 millimicrons long, and having fuzzy profiles. The authors regard the increase in particle width and the fuzzy appearance as indicating that the ends of asymmetrically shaped molecules from the serum react specifically with the antigen molecules. They found further that, when the mixture of antigen and antiserum is applied to a collodion film several hours after mixing, an irregular framework of thickened antigen molecules can be seen. This framework represents the antigen-antiserum precipitate. The authors believe that the electron microscope will be of greatest value in the microscopy of objects having sizes between about 5 and 250 millimicrons, a range not covered by the light microscope and one in which practically all viruses have been found to fall. The electron microscope offers the possibility of securing micrographs of individual virus particles and thus of establishing their sizes and shapes with some precision. The significance of this newly found sight for all branches of science can scarcely be overestimated.

2. Stanley, W. M., and Anderson, Thomas F.: A Study of Purified Viruses with the Electron Microscope (from the Department of Animal and Plant Pathology of the Rockefeller Institute for Medical Research, Princeton, and the Laboratories of the Radio Corporation of America, Camden), J. Biol. Chem. **139:** 325 (May) 1941.

3. Anderson, Thomas F., and Stanley, W. M.: A Study by Means of the Electron Microscope of the Reaction Between Tobacco Mosaic Virus and Its Antiserum, J. Biol. Chem. **139:** 339 (May) 1941.

DISTRIBUTION OF NICOTINIC ACID IN FOODS

Information on the varying amounts of essential dietary factors in foodstuffs is of increasing practical value. For this reason a recent report by Bacharach [1] on the distribution of nicotinic acid in foods is significant. Nicotinic acid or its amide is apparently a dietary essential for man, as it is for the dog, the pig and certain micro-organisms. The importance of nicotinic acid as an etiologic factor in pellagra seems established, although it is true that pellagrins often suffer from a multiple vitamin deficiency. Unfortunately, none of the small standardized laboratory animals are yet available for the biologic assay of nicotinic acid in foods; most of the analytic data available have been obtained with the help of chemical procedures. A number of biologic assays have been conducted with dogs as test animals, however. As pointed out by Bacharach, the degree of agreement between the biologic and some of the chemical methods at least justifies a consideration of the fairly extensive data obtained by the latter type of method.

Yeast is comparatively rich in nicotinic acid, compressed bakers' yeast containing almost 26 mg. per hundred grams and dry bakers' yeast 50 mg. While nicotinic acid is widely distributed in products of plant origin, its concentration therein is usually low. As typical examples may be cited wheat bread, which contains 1.2 mg. of nicotinic acid per hundred grams, white wheat flour about 1 mg., corn flour 0.3 mg., rice powder 1.7 mg., dry peas 1.0 mg., apples less than 0.5 mg., cabbage 0.3 mg. and spinach 1.7 mg. Whole wheat grain contains about 5 mg., raw peanuts 13 mg., and a rice polishings concentrate 140 mg. per hundred grams. The amount of nicotinic acid in products of animal origin likewise shows considerable variation. Milk, for instance, contains 0.5 mg. or less, while in ox liver up to 27.5 mg. per hundred grams has been found.

Data in Bacharach's table indicate that commonly eaten meat products often contain more nicotinic acid on a unit weight basis than do commonly eaten foodstuffs of plant origin. Some of the reported values for the former products are 6.5 to 18.0 mg. for veal, 22.5 mg. for calf liver, 4.7 to 10.4 mg. for ham and 12.8 mg. for ox tongue.

1. Bacharach, H. L.: The Distribution of Nicotinic Acid in Human and Animal Foods, Nutrition Abstr. & Rev. **10:** 17 (Jan.) 1941.

Current Comment

MR. HEARST CONTINUES TO FILL SPACE WITH PROPAGANDA AGAINST SCIENTIFIC ANIMAL EXPERIMENTATION

Like shadowy wraiths from the long dead past suddenly there appear in Mr. Hearst's column "In the News" the letters against animal experimentation written by doctors, some with but most without scientific standing, who lived many, many years—indeed, two generations—ago. Mr. Hearst's column opens with what is stated to be a quotation from Proverbs: "Let not mercy and truth forsake thee; bind them about thy neck; write them upon the table of thine heart. So shalt thou find favor and good understanding in the sight of God and man." Is there not some literary allusion to the prince of evil being able on necessity to quote Biblical text? And even so, has Mr. Hearst forgotten Matthew 10:31, "Fear ye not therefore; ye are of more value than many sparrows." Many of the physicians quoted by Mr. Hearst were even in the time of their living—long, long ago—known as unbalanced faddists and fanatics. More interesting, however, is the thought whether or not the mind of Mr. Hearst is not also dwelling in those ancient premodern years.

MERCURY IN THE HAT INDUSTRY

After December 1 the use of toxic mercurial compounds in fur carroting operations will be largely eliminated from the hat industry in this country. Satisfactory substitutes have been in use by the majority of the trade for some time and are regarded as safe and economical. On the basis of this accumulated experience, model regulations for adoption by the states were recently approved by representatives of the interested labor organizations and the employers, together with state and federal labor and health officials, acting under the sponsorship of the U. S. Public Health Service. One of the long-established principles of industrial hygiene is to protect workers from harmful exposure by substituting harmless materials or substances of a lower order of toxicity.

ARMY MEDICAL LIBRARY BUILDING

Another step has been taken by Congress toward providing an adequate building for the Army Medical Library and Museum. Apparently in 1938, when the Seventy-Fifth Congress appropriated $3,750,000 for the new structure, it was contemplated that the building would be constructed on property already owned by the government and hence no provision was made for the purchase of a site. Consideration was given to selecting a site on the Walter Reed Reservation, but this was abandoned because of its inaccessibility to visiting physicians who wish to use the library. The Seventy-Sixth Congress appropriated $130,000 for personal services and other expenses incidental to the design and preparation of working drawings and specifications of a building for the Library and Museum. Now, in the Seventy-Seventh Congress, a bill has passed the House (H. R. 5146) amending the 1938 act to authorize an additional appropriation for the purchase of a site for the building. The site, which has been selected by the National Capital Park and Planning Commission, is, it is understood, east of the Folger Library and the annex to the Library of Congress. Preliminary plans for the building have been prepared. Prompt enactment of the pending bill will bring nearer to reality this worthy project, which has already been subject to apparently unnecessary delays.

FAMILY EXPENDITURES FOR MEDICAL CARE

According to a Consumer Purchases Study of the United States Department of Agriculture,[1] "medical care accounted for about 5 per cent of the net income of the native white families of most income levels in both small cities and villages." The study notes that according to the estimates of the Technical Committee on Medical Care "the cost of providing adequate medical services and supplies for a large number of families —those needing much and those needing little care— would be covered by payments of approximately $100 per family on a group basis." This study found that, while average expenditures of the families with an income below $2,000 were less than $100, it was higher in the families with incomes above $2,500. There is a most casual statement that "perhaps physicians tended to adjust their charges to the smaller incomes of the farm families," but the assumption is continually maintained that money payments measure the quantity of the medical service received. Some of the tables disprove this fact; for example, the number of office visits in the lowest income class is about 60 per cent of that in the highest; the average expenditures per family for office visits is more than five times as much in the higher as in the lower. In the home calls the corresponding difference is between an increase of not quite 40 per cent in the number of calls and almost fivefold in the expenditures. It is claimed that the averages of less than $100 below the $2,000 income line "did indicate that the medical care was not generally adequate, that many families must have gone without services and supplies they needed." This decidedly doubtful judgment cannot be accepted as true; if it were, the cost of adequate care would be more than $100 per family annually, and the total cost for the United States with its forty million families would be much over four billion dollars. There is only the slightest reference to the possibility that many of the lowest income class received medical care from physicians without charge or failed to pay the sums charged. The itemized figures on the costs of medical care classified in a variety of ways should be helpful in actuarial calculations for various types of prepayment plans for medical care.

1. Hollingsworth, Helen; Monroe, Day; Klem, Margaret C., and Benson, Karl L.: Family Expenditures for Medical Care, Miscellaneous Publication 402, United States Department of Agriculture, Bureau of Home Economics, Washington, D. C., Superintendent of Documents, 1941, price 30 cents.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

REPORT OF COMMISSION ON PHYSICAL REHABILITATION

The Commission on Physical Rehabilitation is authoritatively informed that the Army will maintain its present high physical standards of eligibility for military service and will not undertake the rehabilitation after induction of men classified by Selective Service and Army induction boards as having remediable physical handicaps. In making the following recommendations, the commission has therefore been restricted to a program of voluntary physical rehabilitation.

In order to provide information concerning the frequency and the nature of remediable defects among men examined for Selective Service it will be necessary to require physicians of Selective Service and Army induction boards to state in every instance whether the physical handicap responsible for classification I B or IV F is remediable in their opinions. Such registrants should be grouped in a special classification and designated as I B-R and IV F-R. Without this information it will be impossible for states and local communities to prepare plans and to estimate the cost of a rehabilitation program.

The diagnoses recorded on the records of registrants classified in groups I B and IV F by physicians of the Selective Service and Army induction boards give little indication of the possibilities for complete or partial correction. There is a mistaken impression that all registrants in class IV F are not correctable. Actually, registrants in I B have handicaps which restrict their availability to limited forms of military duty, yet the physical disability in some is permanent and nonremediable. Registrants in IV F are suffering from major disabilities which render them incapable of performing any military duties, but some of the men in this category could be restored to group I B or even I A by the correction of their physical handicaps.

The special classification as I B-R and IV F-R will act as an incentive to voluntary correction of remediable physical handicaps. A comprehensive program for physical rehabilitation of the young men of the nation is important in order to maintain effective man power for industry as well as for military service. It will also have an influence in retarding the development of disabilities of middle age which are responsible for an unemployable group in every community.

Experiments in voluntary rehabilitation have been proposed for a few local areas by the American Red Cross and several other agencies. A small experiment in a few selected urban and rural communities will not provide a satisfactory yardstick to estimate the cost for the entire country nor can it provide a reliable answer to the problem. The commission is of the opinion that we must immediately lay the groundwork of comprehensive future plans for physical rehabilitation of our man power by accumulating accurate information in every part of the United States concerning the frequency and the nature of remediable physical disabilities and it therefore submits the following recommendation:

1. Form 200, "report of physical examinations," under the Selective Service and form 221, WD-AGO, "report of induction of Selective Service man," should be amended to contain (*a*) a place for the examining physician to state whether or not, in his opinion, the physical defect causing rejection is remediable or correctable; (*b*) the creation of subclassification of I B and IV F (I B-R and IV F-R) to indicate whether or not the registrant is classified as suffering from a remediable or correctable physical defect; (*c*) statements to be signed by the registrant in these subclassifications relative to (1) his willingness to undergo corrective and remedial procedures, (2) permission for release of information pertinent thereto and (3) whether or not he will provide for appropriate treatment out of his own financial resources.

2. (*a*) Subparagraph *c* of paragraph 165 of the Selective Service regulations should be amended to permit the examination at any time of confidential records pertaining to the physical condition of a registrant by the governor of the state or his designated official representative; (*b*) Subdivision *b* of paragraph 338 of the Selective Service regulations should be amended to provide appropriate parts of the report of physical examination, form 200, in duplicate, and arrangements be made whereby one form may be retained temporarily for rehabilitation purposes by State Selective Service headquarters and state rehabilitation boards.

3. The following instructions should be issued by the National Director of Selective Service to all local boards: When a local board has finally placed a registrant in class I B-R or IV F-R, the chairman shall write to the registrant advising him of his classification and of the underlying condition that caused such classification, and shall inform him that the condition is considered remediable by the examining physican. He shall also advise the registrant to have the remediable defect corrected by his own physician or dentist or, if the registrant is unable to bear the necessary costs involved, he may have the work performed by applying to the appropriate agency or hospital in his area. For this purpose the state director of Selective Service shall supply all chairmen of local boards with a list of agencies, hospitals or other institutions located in the neighborhood which are prepared to engage in this rehabilitation work during the period of the national emergency. The chairman of the local board shall further advise the registrant of the time that the board has allowed for the correction of his defect, at the expiration of which time the registrant must present himself to the board for reexamination and reclassification.

4. In all states and local areas rehabilitation committees should be created jointly by the Federal Security Agency and the Selective Service System to collaborate with professional groups and with local governmental and voluntary agencies in the development of local rehabilitation facilities.

5. Only a small proportion of the population can afford to pay or will be willing to pay for corrective measures which may make them available for military or industrial service but which do not as yet interfere with their present civilian occupations. Communities differ greatly in the availability of medical facilities, and some states and many local communities will be unable to provide the remedial measures which may be necessary to correct physical handicaps. Because of widespread shifting of population during and after the national emergency, the responsibility is national as well as local. In order to meet the situation realistically it is recommended that Congress enact legislation to defray the cost. As this is primarily a matter of vital necessity for national defense, the cost should be met

directly by federal defense appropriations to the Federal Security Agency, when needed, utilizing fully its available local medical, dental and hospital facilities. Without federal legislation of this nature, it can be predicted that little progress in voluntary physical rehabilitation is to be expected.

In the opinion of the commission the alternative to such a voluntary program is lower physical standards of eligibility for selective service and compulsory physical rehabilitation after induction into the Army. Action is required along the lines of one or other of these alternatives, for the present standards of physical eligibility have reduced the nation's reservoir of eligible registrants to a number far lower than had been anticipated.

GEORGE BAEHR, M.D., Chairman.
ARTHUR W. ALLEN, M.D.
FREDERIC A. BESLEY, M.D.
CHANNING FROTHINGHAM, M.D.
HARRY S. GRADLE, M.D.
M. T. MACEACHERN, M.D.
JOHN T. O'ROURKE, D.D.S.

PREHABILITATION OF REGISTRANTS

IV. DENTAL REQUIREMENTS AND ADVICE

The Dental Advisory Committee to the Selective Service offers here a simple plan whereby registrants themselves may insure their own dental fitness.

The Prehabilitation Plan of Selective Service aims to permit registrants to fit themselves for military examination and service by making them familiar with the standards required and through advice as to how they can find the help necessary to remedy their remediable defects. The prehabilitation plan includes the problem of dentistry as well as of medicine. This plan is applicable to dentistry as to medicine, since the same principles are concerned; in fact, it might be more widely applicable because the teeth are such frequent offenders. More registrants are rejected for poor or insufficient teeth than for any other one reason. In fact, two out of every five are rejected for dental defects.

DENTAL STANDARDS

While it is hoped that registrants will have normal or near normal teeth and gums, the Selective Service System has established minimum dental requirements in keeping with those of the Army for the guidance of the local and advisory board examiners in the selection or rejection of men. These requirements are listed here.

No one will be accepted for service who has less than three front teeth of the cutting variety above and three front teeth below. The edge of the lower teeth must meet the edges of the upper teeth or sit slightly in back of them. Furthermore, no one will be accepted who does not have three upper and three lower back teeth (of the chewing variety) which oppose each other when the jaws are in normal movement. This means, then, that the registrant to be considered for government military service must have at least twelve teeth of the kind specified.

These twelve, or more, teeth must be sound. If they have good fillings or crowns and are free from infection, they will be considered satisfactory. The teeth must be clean and tight in the gums, and the gums must have a normal, healthy appearance.

The government supposes that each young man having too few teeth has already had or will have his family dentist, or some agency or institution, construct plates or bridges to sit on the gums where the crucial teeth are missing. Plates should have clasps (rings) which fit over some of the twelve teeth so that the chewing load will be taken up by both the gums and the teeth and yield a satisfactory dental function.

Decayed Teeth.—Care of Cavities: If any of the twelve teeth have cavities or present dark spots, the registrant should by all means see a dentist so that proper treatment may be completed. The modern dentist is a considerate individual who will do everything in his power to protect you from pain. Dental care of today does not involve the same degree of discomfort as the old fashioned care of yesterday.

When the registrant has teeth in excess of the minimum requirements they should be prized most highly and always kept clean and in good order. They should be accorded the same care as would be given any other cherished possession of great value.

Useful Teeth.—On meeting people, fine, clean, well cared for teeth are among the first things noticed. Teeth add materially to personal appearance as well as serving for eating purposes. Even artificial teeth, when set in the proper spaces and when well matched in color, add much of value to one's appearance and also to health. One of the most important things that a registrant can do for himself is to see that his teeth are properly cared for. All vacancies resulting from extraction should be filled with good dental pontic bridgework or partial plates with clasps.

During examination the registrant should demonstrate to the examiner that he can move his jaws sideways and forward so that certain upper and lower teeth will meet and can thus be used for the purposes of cutting and grinding the food. This is important to the registrant in many instances, particularly when there are few teeth.

Healthy Teeth.—The registrant should see that the teeth are put in first class condition by a dentist who can make sure that the gums are healthy and that any infection which was present has received proper and adequate treatment.

The first rule for keeping the gums healthy is a thorough brushing with a small, strong toothbrush. Dirty teeth eventually lead to cavities and infected gums. Teeth and gums should be brushed after each meal, also before retiring. Probably the greatest cause for decay of teeth is the remnant of food particles left on the teeth. If the food is allowed to decay, the teeth will decay under the food and the gums may become infected, so to keep well and normally healthy pay strict attention to the cleanliness of your teeth.

Freak Teeth.—Teeth which have not come through the gums are said to be impacted or unerupted. Additional teeth are called supernumerary. Such teeth often cause jaw pains, neuralgia, eye trouble, severe unexplainable headaches and other body ailments. In some instances the dentist can bring these teeth through the gums so that they can function and do actually take the place of teeth that are missing. In other instances such teeth may have to be removed. Whatever the remedy, it is wisest to do something about them if you have such teeth.

Infected Teeth.—Many times, teeth are broken off and the roots are left embedded in the gums. These should be removed as a rule because they may be infected. Such teeth and roots may cause infections in the mouth, swellings, growths or even tumors in the jaw, in the cheeks or in the glands that supply the saliva. Such swellings are often disfiguring and may even suggest deformities. In order to be certain about teeth, they should be examined at once and thereafter at least every year. Roentgenograms are useful in detecting cavities, infections or growths, if they are of consequence, which otherwise may not be seen.

Crooked Teeth.—Small underdeveloped or large overdeveloped jaws, with retruding or protruding upper teeth that fail to meet the lower front teeth on any jaw movement, can be corrected so that the teeth will come together. Normally the upper front teeth should overlap one third of the lower front teeth when the jaw is closed. Many dentists render service of this kind. A dentist who does not conduct a general dental practice but who specializes in the straightening of teeth is called an orthodontist. Crooked teeth, teeth that do not meet,

and deformed teeth and jaws can be corrected as a rule by the family dentist. If special skill is required, the orthodontist should be called in. While crooked teeth may be straightened in childhood, it is still possible to accomplish much in certain instances even in adult life. Many registrants could undergo this kind of treatment to advantage.

Preventive Dentistry.—By attending to these simple dental needs you can improve yourself, your appearance and your health. You can prepare yourself for examination and for service in the defense of your country in this unlimited emergency or improve yourself for work in civil life. In doing this, you will be practicing personal preventive dentistry. This, in turn, will redound to your own personal benefit now and in the future. If you take care of your dental defects early, that is, as soon as they are discovered, you may protect yourself from future disease of a more serious nature which will be more expensive and more difficult to treat.

Bad teeth and gums constitute a hazard which should not be tolerated, because they frequently lead to illnesses which make the individual unfit for service of any kind, the office, farm, factory or armed forces. You may think that you can "get by" with dental diseases and still carry on. Possibly you can for a while, but under such circumstances you may not be as fit or as efficient as you think. Certainly you are not fit enough for the armed forces or for any form of strenuous life. You will not be considered fit enough for service—even for limited service. It is questionable also whether you will retain the health necessary to work on the farm, in the office or in industry. As the years pass many illnesses may beset you because of the presence of infected and neglected teeth which might have been avoided had these dental defects been corrected in early life. Why not face the issue squarely now, dispose of the dental defects immediately and fit yourself for service and for better health?

Dental Advice.—If you are interested in restoring and conserving your dental health you should visit a local dentist for advice and for recommendations as to treatment.

SUMMARY

If you will regard your body as your most priceless personal possession and then give it the care you would expend on any other cherished possession, you should become a strong citizen, well equipped to answer any call, civil or military. Your health and welfare are in your hands to dispose of as you see fit.

Remember this: The health of your teeth is essential to the health of your body. The health of your body is at present of crucial consequence to the welfare of your country in its plan of national defense.

SOLDIERS TO RECEIVE TEST TO DETERMINE BLOOD TYPE

Each soldier on active duty in the United States Army will be given a test to determine his blood type in order that transfusions may be given without delay at the time of an accident, the War Department has announced. It will be possible to identify the various types of human blood for the entire army personnel more expeditiously and more economically than has been possible previously. The results of each test will be embossed on the individual's identification tag as soon as his blood type is determined.

It is expected that the necessary serums and equipment will be ready for use by the middle of July. Under the previous method of using human blood serums, which were in liquid form and had to be kept refrigerated, an average observation period of a half an hour was required for results, and microscopic readings were necessary. The new method uses dried serums and gives results in about thirty seconds. No microscopic reading is necessary. A further advantage of the dried serums is that they can be kept without refrigeration and are more stable over a longer period. At least one hundred thousand men a week can be typed and the tests will be conducted as rapidly as serums are made available. The International or Landsteiner classification will be used and the results recorded by the symbols A, B, AB or O.

GUY'S IN THE COUNTRY

Guy's Hospital in London, like many other hospitals, has suffered so much from German bombs that an annex to this famous hospital has been established in the country about 25 miles out of London. A fine old country mansion is being adapted to provide a hospital of one hundred and ten beds. The windows look out over wooded downland, a very different view from that which meets the eyes from the windows of the venerable hospital in London since German bombs have widened the horizon. On the first floor of the country site are large bedrooms and private suites which will provide a number of small wards, rooms for the resident staff, and operating rooms. The second floor provides quarters for forty nurses and the basement for kitchens, dining rooms, laboratories and air raid shelter. There is no elevator big enough to take a bed or stretcher, but the staircase is wide; and so the continuity of Guy's Hospital, which has been unbroken for two hundred years, shall be maintained.

An American organization, "Bundles for Britain," has become keenly interested. Its Hollywood branch has adopted Guy's and will present the additional equipment needed. According to the *Lancet*, May 24, an initial gift of $10,000 will equip the operating room and provide a high voltage roentgen ray plant. Other expensive instruments and furniture have been promised. The annex, in appreciation of these gifts, has been named "Guy's U. S. A. Hospital." The high voltage plant will be housed in a hut especially erected and communicating with the main building by a covered way. The old roentgen ray plant was destroyed by fire some months ago. For the present, only inpatients will be taken at the country site, for the most part air raid casualties, and the sick on its outpatient waiting list.

An American ambulance presented to Guy's by New York friends may make possible a daily ambulance service between Guy's in London and Guy's in the country. While the annex is too small to house any part of the medical school, some members of Guy's teaching staff will take their students out to Guy's in the country for ward rounds, so that it will still play at least a small part in medical education.

MEDICAL ASPECTS OF CIVILIAN DEFENSE

The Office of Civilian Defense and the United States Public Health Service jointly announce the appointment of Dr. George Baehr of New York as medical director in the U. S. Public Health Service in charge of the medical aspects of civilian defense. In this capacity he will act as chief medical officer in the Office of Civilian Defense, under the U. S. director of the Office of Civilian Defense, Mayor F. H. LaGuardia, and will coordinate the activities of these two governmental agencies in their related fields. Surg. Gen. Thomas Parran has assigned to Dr. Baehr several Public Health Service officers for the Washington and the New York offices of the Office of Civilian Defense as well as the liaison health officers recently detailed to each of the nine Army Corps areas.

Dr. Baehr is being assisted by an Advisory Medical Board recently appointed by Mayor LaGuardia, which includes Dr. Elliott C. Cutler of Boston, Dr. Oliver Kiel of Wichita Falls, Texas, Dr. Albert McCown of Washington, D. C. Mayor LaGuardia plans to enlarge the board by the appointment of Dr. Fred Rankin, President-Elect of the American Medical Association, and Dr. R. C. Buerki of the American Hospital Association.

The work of the Office of Civilian Defense in the field of medicine and public health will be concerned largely with the development of plans and facilities for disaster relief in the cities, beginning with those along both seaboards. Preparation of these plans is already well advanced and they will be announced shortly. In order that the facilities for disaster relief and their administration throughout the country may fit into a common pattern, all states and local communities are advised to adopt the recommendations of the Office of Civilian Defense. Although the British experiences will be utilized, plans for the

United States will be adapted to the existing organizational pattern of the state and local governments of the country.

The medical equipment for disaster relief will be standardized in conformity with the experience of the Army and the American Red Cross so that an adequate supply may be provided to meet any future need. The Office of Civilian Defense will shortly announce the adoption of a standard stretcher, standard stretcher racks to permit the transportation of 4 stretcher patients in station wagons and small trucks, standard first aid kits patterned after those of the American Red Cross, standard equipment for first aid posts or casualty clearing stations, and so on.

An intensification of the first aid training program is projected which will include the preparation of a brief course of instruction for the general public; some persons may not require the standard and advanced courses of the American Red Cross. Training courses for volunteer nurses' aides will immediately be extended and placed on a practical basis.

MEDICAL STUDENTS TO BE TRANSFERRED TO RESERVE POOL

On June 18 the War Department rescinded an authorization dated May 26, 1941 pertaining to the appointment of medical students as second lieutenants in the Medical Administrative Corps and substituted other authorizations. Now medical students who are appointed as reserve officers in the Medical Administrative Corps will be transferred to the War Department Reserve Pool and retained there until eligible for appointment in the Medical Corps Reserve or until discharged. These appointments will be made without reference to an examining board as prescribed in army regulations, and corps area commanders are authorized to waive the minimum qualifications for appointment of physically qualified male citizens who have successfully completed the first two years in approved medical schools within the United States. Applications for appointment, together with a report of physical examination, should be forwarded by the dean of the medical school to the commander of the corps area in which the school is located, together with a certified statement that the applicant has completed the first two years of medical instruction and is an accredited student in the last two years of medicine at the institution.

Officers appointed under this authorization and transferred to the reserve pool will be discharged for the convenience of the government from the reserve corps on matriculation in an unapproved medical school or on failure to complete successfully the four year course in medicine or on discontinuance of their medical education or on failure to be appointed in the Medical Reserve Corps within one year after completion of the four year medical course.

SURVEY OF MEDICAL SERVICES IN INDUSTRY

Arrangements were recently completed between the Public Health Service and the Metropolitan Life Insurance Company whereby Dr. W. J. McConnell of the latter organization will be appointed a consultant to the Division of Industrial Hygiene of the National Institute of Health. Dr. McConnell, in cooperation with the division, will direct a nationwide survey of present day medical service facilities in industry. The purpose of this cooperative investigation is to obtain information on which standards for health maintenance programs in various types and sizes of industry may be based.

CHANGES IN PERSONNEL IN SURGEON GENERAL'S OFFICE

Col. John A. Rogers, M. C., new executive officer in the Surgeon General's Office, Washington, D. C., reported for duty, June 23, succeeding Brig. Gen. Larry B. McAfee, who will succeed Brig. Gen. Albert G. Love as chief of plans and training division. General Love will retire July 31, when he will reach the statutory age limit. Other new officers in the Surgeon General's Office are Major Charles L. Leedham in the professional services division and Capt. Tom F. Whayne in the preventive medicine division. Major Ernest D. Liston will continue as assistant executive officer.

SUBCOMMITTEE ON INDUSTRIAL HEALTH AND MEDICINE

On June 20-21 the Subcommittee on Industrial Health and Medicine of the Health and Medical Committee met in Detroit with liaison officers from the U. S. Public Health Service, the U. S. Army and the National Research Council. A progress report on the activities of the Division of Industrial Hygiene of the National Institute of Health in the national defense program was made. A number of defense industries in the area were visited for the purpose of observing model medical and industrial hygiene services in these plants.

The subcommittee plans to meet again in September in Connecticut, at which time it will visit key defense industries to determine to what extent medical and industrial hygiene services are being provided for employees.

MEDICAL DEPOT MOVED TO ST. LOUIS

The War Department has purchased a building in St. Louis, at a cost of $2,300,000, which it plans to use as the main medical depot in the United States. While the main medical depot is being moved from the New York Port of Embarkment to St. Louis, a smaller independent medical depot will be maintained in New York. The St. Louis location, on account of its central location and exceptional railroad facilities, is expected to function more efficiently than the old depot in New York.

OFFICE OF DERMATOSES INVESTIGATIONS

On June 13 the Office of Dermatoses Investigations of the National Institute of Health was transferred from the Division of Infectious Diseases to the Division of Industrial Hygiene. This office will function as a third section of the division, to be known as the Dermatoses Investigations Section, with Medical Director Louis Schwartz in charge.

FREE FRENCH TO GET ROENTGEN RAY UNIT

The Free French Forces in Brazzaville, French Equatorial Africa, will soon receive the most modern army field roentgen unit developed in the United States.

Work was completed on the outfit, July 5, at a cost of $2,600, given by American donors and raised by the British American Ambulance Corps, 420 Lexington Avenue, New York. The outfit was developed by Dr. Harry F. Waite, with B. A. Birnbaum designing the trailer body, both members of the Picker X-Ray Corporation. The unit is equipped to do emergency work both in fluoroscopy and in roentgenography. There is a dark room and equipment for rapid developing, drying and viewing of negatives. The outfit has its own generating plant; in fact the generating plant may be used to supply current to outside sources.

INVESTIGATION OF HEALTH HAZARDS IN MUNITIONS PLANTS

Studies of industrial health hazards in ordnance establishments, in industrial plants of the Air Corps and at Quartermaster Corps depots are being made by the Division of Industrial Hygiene of the National Institute of Health, in cooperation with the Office of the Surgeon General of the Army. At present one mobile unit is investigating health conditions at the ordnance depots at Ogden, Utah; Benicia, Calif.; Fort Wingate, New Mexico, and at McClelland Field, Sacramento, Calif. A second mobile unit is working at Frankford Arsenal at Philadelphia, and a third unit has just completed studies at the Holabird Quartermaster Corps Depot at Baltimore. A fourth unit started operation in New England arsenals on June 30.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

WAR DEPARTMENT

The following additional medical reserve corps officers have been ordered to extended active duty by the War Department, Washington, D. C.:

ANDERSON, Melvin Walter, 1st Lieut., Portland, Maine.
BELLIS, Carroll Joseph, 1st Lieut., St. Paul.
CROSBY, William Holmes, Jr., 1st Lieut., Oil City, Pa.
DALY, John Nicol, 1st Lieut., Rochester, N. Y.
EMMERT, Max Walter, Jr., 1st Lieut., Birmingham, Ala.
EVANS, Albert Louis, 1st Lieut., Sandersville, Ga.
EVANS, William Dustin, 1st Lieut., Los Angeles.
HAUSER, Isadore Jerome, 1st Lieut., Detroit.
HOLMES, Robert Hicks, 1st Lieut., Lumberton, N. C.
HURSH, Laurence Mercer, 1st Lieut., Hibbing, Minn.
KIERSCH, Theodore Alexander, 1st Lieut., El Paso, Texas.
LeGOLVAN, Paul Celestin, 1st Lieut., Marquette, Mich.
MEAD, James G., 1st Lieut., Yorktown Heights, N. Y.
MERRITT, Robert Edward, 1st Lieut., San Francisco.
ORBISON, J. Archer, 1st Lieut., Ann Arbor, Mich.
RISER, William Henry, Jr., 1st Lieut., Lafayette, Ala.
ROYALS, James Lee, 1st Lieut., Meridian, Miss.
SCHINDLER, J. A., 1st Lieut., Pittsburgh.
SCHLECTE, Marvin Charles, 1st Lieut., San Antonio, Texas.
SERETAN, Edward Lloyd, 1st Lieut., New York.
SWINDLER, Charles Mathews, 1st Lieut., Pittsburgh.
TRUPP, Mason, 1st Lieut., Atlanta, Ga.
UHRICH, Gerard Ignatius, 1st Lieut., Atlanta, Ga.
WILLIAMS, Ben Clayton, 1st Lieut., Baltimore.

Orders Revoked

COSBY, Oswald W., Captain, Baton Rouge, La.
DICKSON, Douglas D., 1st Lieut., Oakland, Calif.
EVERETT, Peter, Captain, New Orleans.
KAUFMANN, Maurice, Captain, Waverly Hills, Ky.
LYTTON, William Bryan, Jr., 1st Lieut., Webster Grove, Mo.
MATHIS, Earl N., 1st Lieut., San Francisco.
POTTER, Harold Walter, Lieut. Colonel, Newport News, Va.
RINGNESS, Henry Raymond, 1st Lieut., Washington, D. C.
THOMAS, Herbert H., Jr., 1st Lieut., Myrtle Point, Ore.
VOTAW, Frederick L., 1st Lieut., Franklin, Pa.
WISE, Albert W., 1st Lieut., Davenport, Iowa.

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

BLAIS, Wilfred A., Lieut., Pittsfield, Mass., Fort Banks, Mass.
CORBIN, Stuart S., Lieut., Burlington, Vt., Fort Ethan Allen, Vt.
DELGREGO, Arthur L., Major, Hamden, Conn., Fort George G. Meade, Md.
EWELL, John W., Lieut., Rowley, Mass., Camp Forrest, Tenn.
FEINMAN, Maxwell H., Lieut., Lynn, Mass., Fort Oglethorpe, Ga.
FISHER, Samson, Lieut., Oakland, Maine, Maxwell Field, Ala.
HUSSEY, Earle U., Captain, Lynn, Mass., Camp Edwards, Mass.
HYLAN, Nathan W., Lieut., Derry Village, N. H., Fort Williams, Maine.
IRGENS, Edwin R., Lieut., Waterville, Maine, Fort Williams, Maine.
LAWRY, Oram R., Jr., Lieut., Portland, Maine, Camp Forrest, Tenn.
MONGILLO, Frank, Major, New Haven, Conn., Fort George G. Meade, Md.
MORIARTY, Patrick M., Major, Chicopee, Mass., Fort Adams, R. I.
PULMAN, Peter B., Major, West Hartford, Conn., Fort George G. Meade, Md.
ROBISON, Roy C., Lieut., New Canaan, Conn., Fort Ethan Allen, Vt.
SCHILLANDER, Carl A., Captain, Springfield, Mass., Camp Edwards, Mass.
WALSH, Maurice J., Lieut., Burlington, Vt., Fort Ethan Allen, Vt.

Orders Revoked

ANDERSON, Justin L., Lieut., Reading, Mass.
CORBIN, Stuart S., Lieut., Burlington, Vt.
CUTLER, Isadore L., Lieut., Rutland, Vt.
DURGIN, Lawrence N., Captain, Amherst, Mass.
DURLACHER, Stanley H., Lieut., New Haven, Conn.
EASTMAN, Oliver R., Lieut., Burlington, Vt.
GUDGER, James R., Captain, West Hartford, Conn.
HANSELL, Howard R., Lieut., Sharon, Conn.
KNOX, Barron D., Lieut., Holyoke, Mass.
KREIDBERG, Marshall B., Lieut., Dorchester, Mass.
LEWIS, Henry R., Lieut., Wethersfield, Conn.
MILLSTEIN, Hyman, Lieut., Southwest Harbor, Maine.
MOORE, Kenneth T., Lieut., Providence, R. I.
SMERZ, Anton, Lieut., Worcester, Mass.
THORNE, Lewis, Lieut., New Haven, Conn.

THIRD CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Third Corps Area, which comprises the states of Pennsylvania, Virginia, District of Columbia and Maryland:

BEHREND, Albert, 1st Lieut., Philadelphia, Carlisle Barracks, Pa.
BRANT, Carl Ernest, 1st Lieut., Greensburg, Pa., Fort George G. Meade, Md.
COMESS, William, 1st Lieut., York, Pa., Fort George G. Meade, Md.
DALTON, Horace Milton, 1st Lieut., Charlottesville, Va., Indiantown Gap Military Reservation, Pa.
EVASHWICK, George, 1st Lieut., Turtle Creek, Pa., Aberdeen Proving Ground, Md.
EVERHART, Wilson Christian, 1st Lieut., Pittsburgh, Fort George G. Meade, Md.
GROSS, Cyril Vogel, 1st Lieut., Philadelphia, Camp Shelby, Miss.
HARBOLD, Harold Valentine, 1st Lieut., York, Pa., Indiantown Gap Military Reservation, Pa.
HAUSE, Welland Angel, 1st Lieut., Angels, Pa., Fort Story, Va.
HOOKER, Charles Bullard, 1st Lieut., Washington, D. C., Edgewood Arsenal, Md.
KURLAND, Albert Alexander, 1st Lieut., Baltimore, Fort George G. Meade, Md.
LAUGHLIN, Robert Miller, 1st Lieut., Pittsburgh, Aberdeen Proving Ground, Md.
McDONALD, Roland John, 1st Lieut., McAdoo, Pa., Fort George G. Meade, Md.
MORSE, Robert Thatcher, 1st Lieut., Washington, D. C., Fort George G. Meade, Md.
MOSER, George Paul, 1st Lieut., Bloomsburg, Pa., Carlisle Barracks, Pa.
MOYER, Forrest George, 1st Lieut., Allentown, Pa., Camp Stewart, Ga.
SCHEIN, George Clarence, Captain, Pittsburgh, Fort Story, Va.
WIDOME, Allen, 1st Lieut., Washington, D. C., Fort Eustis, Va.
ZEMAN, Erwin Doehren, 1st Lieut., Erie, Pa., Fort Story, Va.

Orders Revoked

BASTACKY, Morris, 1st Lieut., Pittsburgh.
CHASE, William D., 1st Lieut., McLean, Va.
DUNN, John N., Captain, Blackstone, Va.
HEIGES, Harold Lynwood, 1st Lieut., Washington, D. C.
JONES, Donald Emerson, 1st Lieut., Mount Pleasant, Pa.
LOGAN, Thomas Megowan, Captain, Philadelphia.
MANCUSO, Joseph A., 1st Lieut., Meadville, Pa.
MASON, John Henry, Jr., 1st Lieut., Mayview, Pa.
MONTGOMERY, Edward S., 1st Lieut., Tarentum, Pa.
MORSE, Robert Thatcher, 1st Lieut., Washington, D. C.
OMBRES, Severn Richard, 1st Lieut., Meadville, Pa.
PRESTON, Henry Grant, 1st Lieut., Harrisonburg, Va.
RAPEE, Lawrence Albert, 1st Lieut., Washington, D. C.
RUSSO, Albert J., 1st Lieut., Wilkes-Barre, Pa.
SICA, Paul A., 1st Lieut., Mount Lebanon, Pa.
STEINMETZ, Henry G., Captain, Arlington, Va.
THOMAS, John L., 1st Lieut., Greenville, Pa.
UPDEGRAFF, Harry Beshore, 1st Lieut., Millersburg, Pa.
WARREN, Charles W., 1st Lieut., Upperville, Va.

ORDERED TO FOREIGN DUTY

CUVILLIER, Louis Marshall, Jr., 1st Lieut., Washington, D. C., Hickam Field, Hawaii.
DUNKLE, Philip Lee, 1st Lieut., Hebron, N. H., Borinquen Field, Puerto Rico.
HARRIS, Frank Henry, 1st Lieut., Wheeling, W. Va., Station Hospital, Schofield Barracks, Honolulu, Hawaii.
KATZ, Charles Joseph, 1st Lieut., Fort Bliss, Texas, Transport Service Manila, Philippine Islands.
LYTLE, Robert Pinkerton, Captain, Cleveland, Borinquen Field, Puerto Rico.
MANGIMELLI, Samuel Thomas, 1st Lieut., Omaha, Camp Paraiso, Canal Zone.
SMITH, Jack Irvin, 1st Lieut., Mooresville, Ala., Air Base, Ponce, Puerto Rico.
WILBUR, WALTER IRVING, 1st Lieut., Portland, Ore., Station Hospital, Port Richardson, Anchorage, Alaska.
WONG, James Sin Fook, Captain, Philadelphia, Hawaiian Department, Fort Shafter, Honolulu, Hawaii.

ORGANIZATION SECTION

FEDERAL GRANTS TO STATES FOR PUBLIC HEALTH WORK

AN ANALYSIS BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION

For the fiscal year ending June 30, 1942, the sum of $11,000,000 has been made available by the Congress to assist states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate public health activities, including the training of personnel for state and local public health work.[1] Under the provisions of the Social Security Act, as amended, the Surgeon General of the United States Public Health Service, with the approval of the Federal Security Administrator, is required to allot the money made available for grants for public health work on the basis of (1) the population, (2) special health problems and (3) the financial needs of the respective states. Regulations have now been issued providing for the distribution of this federal money.[2]

Twenty-seven and five-tenths per cent of the appropriation will be allotted in the ratio which the population of each state bears to the population of the United States as shown by the Census Bureau 1940 population census. Forty-five per cent of the appropriation will be distributed on the basis of (1) the ratio which the mean annual number of deaths in each state from pneumonia, cancer and other infectious and parasitic diseases, except influenza and syphilis, bears to the total mortality from these causes in the United States as shown by the Bureau of Census "mortality statistics" for the five years 1934-1938; (2) prevalence of malaria, hookworm disease, trachoma, typhus fever and other similar geographically limited diseases, special industrial hazards and other conditions that result in an inequality of exposure to these hazards among the states; (3) special conditions which create unequal burdens in the administration of equal public health services among the states indicated by the relative population density as shown by the Bureau of Census 1940 population census; (4) the need for regional training centers, and (5) the health needs occasioned by national defense activities, including the environments of military posts, cantonment and maneuver areas, and defense industrial areas. The remaining 27.5 per cent of the appropriation will be allotted on the basis of the financial needs of the states, determinable by the ability of the state to raise revenue expressed indirectly in terms of differences in per capita five year mean income as computed by the United States Department of Commerce for the years 1935-1939.

The total amount allotted to the states on the basis of population and on the basis of special health problems will be available for payment to the states when matched dollar for dollar by state or local public funds for public health service as follows: (*a*) 50 per cent by an equal amount of existing appropriations of public funds for public health services and (*b*) 50 per cent by an equal amount of "new appropriations of public funds for public health services made since January 1, 1935" or made prior to that date for the specific purpose of matching funds available under the Social Security Act. The Surgeon General may, in his discretion, permit not to exceed 50 per cent of the money available for matching with new public funds to be matched with existing state appropriations for local health work when the state is already making a substantial appropriation for this purpose and may waive in whole or in part matching requirements in those states in which the per capita appropriation for state health department services, exclusive of funds for the maintenance of institutions, exceeds the average per capita appropriations of all the states for the same purposes. No funds allotted to a state from this appropriation may be used to replace state or local funds in such a way as to effect a conservation or reduction of appropriations for health work by state and local governmental agencies.

To be eligible to receive payments from allotments, each state must submit to the Surgeon General of the Public Health Service a comprehensive statement of any changes in the state health organization, programs, appropriations and budgets since the last outline of such organization, programs, appropriations and budget was filed. This statement is to include all activities maintained through local, state or federal funds under the supervision of or in cooperation with the state health department. There must be submitted also a proposed plan for extending and improving the administrative functions of the state department of health, including the administration of personnel on a merit basis. When found acceptable, the merit system shall apply to state or local personnel rendering services in accordance with budgets submitted to the Public Health Service. At the option of the state agency, however, there may be exempted from compliance with the merit system plan (1) members of state and local boards or commissions, (2) the executive head of the state agency administering the state public health program, (3) members of advisory councils or committees or similar bodies paid only for attendance at meetings, (4) state and local officials serving ex officio and performing incidental duties and (5) all part time professional persons who are paid for any form of medical, nursing or other professional service and who are not engaged in the performance of administrative duties under the state plan but who meet the standards of training and experience established by the responsible state authority. There must be submitted to the Surgeon General too a proposed plan for extending and improving county, district and city health services.

Payments to the states are also conditioned on the submission of a budget for each project, state or local, in which public health service funds are to be utilized and budgets for new projects. Various types of reports are required, periodic financial reports and progress reports of activities, including an annual report of all activities of the state health department, which may be submitted in narrative form.

In order to meet the needs for properly qualified professional and technical personnel with which to conduct effectively the state and local health services, funds paid to a state may be used to pay living stipends,

1. Public Law No. 146, 77th Congress, approved July 1, 1941.
2. Federal Register **6**: 3287 (July 8) 1941.

tuition and traveling expenses for the training of personnel employed or to be employed in the state and local health services. Except when specifically authorized by the Surgeon General, the training period may not exceed one year for any one individual. Allowances for stipends for public health trainees may not exceed the amount specified by the Surgeon General. A trainee application form provided by the Public Health Service must be completed by the proposed trainee and submitted by the state health officer with his recommendation to the district office of the Public Health Service for approval before the trainee enters on training.

MEDICAL ECONOMIC ABSTRACTS

UNITED STATES VITAL STATISTICS

A "Summary of Vital Statistics" for 1939, issued by the Bureau of the Census May 12, 1941 gives a more comprehensive view of this field than has been furnished by any previous documents. Its first paragraph summarizes the situation:

> 1939 was a very significant year in the health progress of the nation. The incidence of reportable communicable diseases was relatively low and mortality rates for a number of causes of death were the lowest ever recorded for the United States death registration area. The death rate for all causes was, in 1939, 10.6 per 1,000 estimated population, the lowest death rate ever reported in the history of the registration area. New record lows were also established in the infant and maternal mortality rates, and in death rates for causes such as influenza and pneumonia, tuberculosis, scarlet fever, measles, malaria, diarrhea and enteritis, typhoid and paratyphoid fever, etc. On the other hand, the 1939 death rates for heart diseases, cancers and diabetes have been the highest ever reported in the forty-year history of national vital statistics.

A separate study made by Walter F. Willcox indicates:

> . . . that the death rates for states that were predominantly urban in population characteristics fell more rapidly during the period 1900 to 1930 than the death rates for the more rural states. Willcox suggests that the more rapid decline in the mortality rate in the urban areas was due to the greater influence of the public health movement in the cities than in the rest of the country.

The death rates for the urban industrial regions have now become more or less stabilized and are now dependent largely "on the average age of the general population, the race and economic status."

The United States is low in the rank order of death rates among the various countries of the world. Those that are below it are Denmark, Uruguay, Canada, Norway, New Zealand, Australia, Union of South Africa and the Netherlands. (Is there any significance in the fact that of these nations Canada, New Zealand, Australia, the Union of South Africa and the Netherlands are among the few countries left that have no system of compulsory sickness insurance and that the system of Denmark is the one most closely controlled by the medical profession?)

The infant mortality has continuously decreased from 99.9 in 1915 to 48 in 1939. The most rapid period of fall was from 1920 to 1930. There are only six nations with a lower infant mortality than the United States. These are Sweden, Switzerland, Australia, Norway, the Netherlands and New Zealand. (None of these have systems of compulsory sickness insurance.)

Maternal mortality is also steadily declining at an apparently accelerated rate. (Since these figures are confined to the registration area, they are subject to the significant error that the period covered was one of rapid addition to the registration area of states generally with a higher maternal death rate and that the period from 1930 to 1939, during which there has been the most rapid decline, is one during which there were fewer additions.)

There is a wide difference in the regional death rates for puerperal causes. The average for the United States is 40.4 for 10,000 live births, but the Pacific, New England, Middle Atlantic, East and West North Central all have maternal death rates below 35. (These sections contain a population much larger than that of any nation having a lower maternal mortality, and important omissions in birth registration possibly account to some extent for the higher birth rates in other sections.)

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 3484 has passed the House, providing retirement pay and hospital benefits to certain reserve officers of the Army disabled while on active duty. This bill provides that reserve officers of the Army who were called or ordered into the active military service by the federal government for extended military service in excess of thirty days on or subsequent to Feb. 28, 1925 other than for service with the Civilian Conservation Corps, and who are now disabled from disease or injury contracted or received in line of duty while so employed, shall be deemed to have been in the active military service during such period and shall be entitled to the same retirement pay and hospital benefits as are now or may hereafter be provided for officers of corresponding grades and length of service in the Regular Army. H. R. 4293 has passed the House and Senate, providing that any person who furnishes blood from his or her veins for transfusion in the veins of a person entitled to and undergoing treatment at government expense or who shall furnish blood for blood banks or for other scientific and research purposes, in connection with the care of any person entitled to treatment at government expense, shall be entitled to be paid therefor, for each blood withdrawal, a sum not to exceed $50. H. R. 4476, providing for sundry matters affecting the military establishment and containing an authorization for the employment of osteopaths as interns in army hospitals, was reached on the consent calendar of the House, June 7. Consideration of the bill was postponed by objection filed by Representative Wolcott, Michigan. H. R. 5146 has passed the House, amending an act passed in 1938 authorizing an appropriation for a new building for the Surgeon General's Library and Museum. The pending bill specifically authorizes the purchase of a site for the new building and increases the appropriation previously authorized by the sum of $1,000,000.

WOMAN'S AUXILIARY

South Dakota

The Woman's Auxiliary to the South Dakota State Medical Association held its annual meeting in Mitchell May 18-20. The following officers were elected: president, Mrs. F. C. Nilsson, Sioux Falls; president-elect, Mrs. B. M. Hart, Onida; first vice president, Mrs. D. R. Mabee, Mitchell; second vice president, Mrs. G. E. Whitson, Madison; recording secretary, Mrs. J. C. Hagin, Miller; corresponding secretary and treasurer, Mrs. Otto Hansen, Valley Springs. Dr. Bertrand M. Hart, president of the South Dakota State Medical Association, spoke. The auxiliary was entertained by the Mitchell auxiliary at the home of Mrs. B. A. Bobb. A banquet was held at the Masonic Temple at which Dr. Roy W. Fouts of Omaha was the speaker.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Changes at University of Arkansas.—Dr. Byron L. Robinson, professor of anatomy, University of Arkansas School of Medicine, Little Rock, has been appointed dean of the school, succeeding Dr. Stuart P. Cromer, beginning July 1. Dr. Silas C. Fulmer, who formerly was assistant dean at the school, has again been appointed to this position. Other changes reported include the appointment of Mr. Walter J. Grolton, superintendent of the St. Louis City Hospital, St. Louis, as superintendent of the University Hospital.

University Buys Radium for Hospital.—Fifty mg. of radium has been purchased for use in the tumor clinic of the University Hospital, Little Rock, newspapers report. The radium was bought with a donation of more than $600 to the University of Arkansas School of Medicine, Little Rock, from the Elise A. Lake Foundation, a gift of $600 by the state hospital of nervous diseases and an additional sum from the school of medicine. The Lake foundation with this gift disposed of all the funds on hand. In the future, all donations made honoring the memory, life and service to the state of the late Elise A. Lake will be accepted by the University of Arkansas School of Medicine and will be devoted in her name wholly to the purposes of the foundation.

CALIFORNIA

Plague Infection.—Under date of May 24 Dr. Newton E. Wayson, medical officer in charge of plague suppressive measures, San Francisco, reported plague infection, proved by animal inoculation and cultures, in 298 fleas from 20 beecheyi squirrels submitted to the laboratory April 29, in 64 fleas from 11 beecheyi squirrels submitted to the laboratory April 29 and in 46 fleas from 3 beecheyi squirrels submitted to the laboratory May 14, all from the J. McKenzie Ranch, 7 miles south and 5 miles west of Tehachapi, Kern County.

Dr. Pardee Resigns.—Dr. George C. Pardee, Oakland, ex-governor of California, concluded fifty-two years of public service May 15, when he resigned as president of the board of directors of the East Bay Municipal Utility District and as a member of the Oakland Port Commission, positions he has held, respectively, since 1924 and 1927. Born in San Francisco in 1857, Dr. Pardee graduated in medicine at the University of Leipzig in 1885 and specialized in diseases of the eye and ear. In Oakland he served as a member of the board of health, 1889-1891; member of the city council, 1891-1893; mayor, 1893-1895; regent of the state university, 1899-1903. He was governor from 1903 to 1907.

DISTRICT OF COLUMBIA

Gibson Award.—The Frank E. Gibson Award, consisting of $25 in cash and a certificate, given annually for the best scientific paper presented at a meeting of the Washington Medical and Surgical Society, was given this year to Dr. Walter O. Teichmann during the society's forty-fourth annual dinner. The guest speaker was Hon. Samuel Wilder King, delegate from Hawaii, who discussed "Hawaii and the National Defense," and guests included Dr. Carlos N. Brin, ambassador of Panama, and Aristides A. Moll, secretary of the Pan American Sanitary Bureau.

GEORGIA

Laboratory for Ophthalmologic Research.—Mr. L. F. Montgomery, Atlanta, is the donor of a research laboratory in the department of ophthalmology of Emory University School of Medicine, to be established in Grady Hospital, according to the Fulton County Medical Society *Bulletin*. While the unit will be established permanently for Grady Hospital, its facilities will be available to other physicians.

Work Begun on Academy's New Home.—Excavation for the new Academy of Medicine, Atlanta, was begun June 10. The building will house the offices of the Fulton County Medical Society, owners of the academy building, the Medical Service Bureau and the Medical Association of Georgia. It will also contain the county medical society's library and museum, an auditorium to seat three hundred and twenty-five persons, kitchen, dining room and lounges. Present plans call for an expenditure of more than $100,000 for the building.

Society News.—The Fulton County Medical Society was addressed, July 7, in Atlanta by Drs. Frank K. Boland Sr. on "The Treatment of Hernia" and James K. Fancher, "Calcium Metabolism." Dr. Charles W. Roberts, newly elected member of the Board of Trustees of the American Medical Association, was to discuss the recent transactions of the House of Delegates of the Association. The society was addressed in Atlanta, June 2, by Drs. William O. Martin Jr. and Joseph C. Massee on "The Correction of Crossed Eyes" and "Phonocardiography" respectively.

Personal.—Dr. John M. Walton, Atlanta, has been appointed state venereal disease control officer, according to *Georgia's Health*. He succeeds Dr. Aaron Wilson Brown. Dr. Walton had been associated with the Atlanta department of health. ——Dr. John W. Oden, formerly of Milledgeville, has been appointed medical superintendent of the Georgia Training School for Mental Defectives at Gracewood.——Dr. Lovick P. Longino, Milledgeville, has been appointed superintendent of the Milledgeville State Hospital, and Dr. Edward W. Schwall, Gracewood, has been appointed clinical director.

IDAHO

Plague Infection.—Dr. Newton E. Wayson, medical officer in charge of plague suppressive measures, San Francisco, reported plague infection proved positive on laboratory examination in fleas from 22 ground squirrels shot May 14 near Parma in Canyon County, and in another lot of fleas from 13 ground squirrels shot May 14 in Payette County.

ILLINOIS

Fund for Orthopedic Literature.—The board of trustees of the Springfield Medical Library Association announces the receipt of a fund of $500 to be used for the purchase of orthopedic literature. The fund was created by the local chapter of the American Business Club.

Medical Museum for County Society.—The Rock Island County Medical Society has announced a plan to establish a medical museum at the Augustana College museum in Denkmann Memorial Library, Rock Island. The college offered to set aside a special room in the museum, and members of the society have agreed to donate or lend old instruments for exhibit. Plans to establish a reading room for the society at the museum were also discussed at a meeting in East Moline on May 13.

Chicago

Kretschmer Memorial Fund.—The Institute of Medicine of Chicago announces the establishment of a foundation to be known as the Edwin R. Kretschmer Memorial Fund, given by Dr. and Mrs. Herman L. Kretschmer in memory of their son, who died last February. Income from the fund is to be used for research lectures on myelogenic leukemia and for research in the field of blood dyscrasia. Dr. Kretschmer is a member of the board of governors of the institute and Treasurer of the American Medical Association.

New Physical Therapy Unit at Michael Reese.—A new physical therapy building, to be known as the Alfred C. Meyer Memorial, was opened on June 15 as a memorial to the late Mr. Meyer, from 1920 to 1936 president of Michael Reese Hospital. The unit will provide facilities for the treatment of infantile paralysis and other conditions to which physical therapy is applicable. The new building adjoins the main building to the north. Its first floor comprises fifteen treatment rooms, including a gymnasium for corrective gymnastics, fever therapy rooms and a hydrotherapy section. The second floor, which is a continuation of the private room division of the main hospital, is an eighteen bed unit for the care of general patients. The new Ervill R. Silberman pool for corrective underwater gymnastics in the basement, donated by J. D. Silberman and his son Donald, will be used for the treatment of the effects of infantile paralysis, spastic paralysis, spinal injuries and arthritis. The basement also contains a brace shop, the gift of the Chicago Club for Crippled Children. Three additional floors are also being completed in conjunction with the Nelson Morris Research Institute. These contain laboratories for cardiovascular research, donated by Mrs. A. D. Nast; laboratories for pediatric research donated by Albert and Hortense Kundstadter, and additional laboratories of the Samuel Deutsch Serum Center, for serum and virus research, donated by Mrs. J. Sylvan Kaufman, Mrs. Harold Lachman and Mrs. Henry M. Lepman.

IOWA

Institute on Industrial Health.—The state department of health and the state medical society sponsored a special institute on industrial health recently for the practicing physician, the industrial physician and the industrial manager. Each series of lectures was offered in the following centers: Burlington, June 23; Cedar Rapids, June 24; Mason City, June 25; Sioux City, June 26 and Des Moines, June 27. Out of state speakers included Drs. Clarence O. Sappington, William R. Cubbins, Sumner L. S. Koch and Michael L. Mason, Chicago; Henry W. Meyerding, Rochester, Minn.; Carey P. McCord, Detroit, and Hiram Winnett Orr, Lincoln, Neb.

Society News.—Dr. Jesse Carl Painter, Dubuque, discussed "Diagnosis of Tuberculosis" before the Bremer County Medical Society in Waverly, May 26.——Dr. Diedrich J. Haines Jr., Des Moines, addressed the Greene County Medical Society in Jefferson, June 12, on diseases of the blood.——The Hardin County Medical Society was addressed, May 27, by Dr. Wilbur C. Thatcher, Fort Dodge, on abnormal labor.——Dr. Elmer L. DeGowin, Iowa City, discussed "Use and Management of the Blood and Serum Bank" before the Woodbury County Medical Society in Sioux City, June 23, and Dr. Willis M. Fowler, Iowa City, "The Indications for Transfusion."

KENTUCKY

Dr. Katz Lectures.—Dr. Louis N. Katz, Chicago, recently delivered the first Samuel D. Gross Lecture of the Phi Delta Epsilon fraternity at the University of Louisville School of Medicine. His subject was "The Mechanism of Heart Failure."

District Meetings.—The Second Councilor District of the Kentucky State Medical Association was organized at a meeting in Owensboro, June 10. Dr. Virgil E. Simpson, Louisville, addressed the new society on "The Relation of the Medical Profession to the Care of Indigent Tuberculosis Patients." Dr. E. Dargan Smith, Owensboro, was elected president and Dr. Gaithel L. Simpson, Greenville, secretary. ——The sixth and seventh councilor districts held a joint meeting in Danville, May 22, with the following speakers, among others: Major William N. Lipscomb, on "Some Phases of the Selective Service"; Drs. Ellis S. Allen, "Fracture of the Femur," and James H. Pritchett, "Management of Communicable Diseases." All are of Louisville.

LOUISIANA

Changes in Health Officers.—Dr. Emmett J. Young, Arcadia, health director of Bienville Parish, has been named to a similar position in Lincoln Parish, succeeding Dr. Nelse P. Liles Jr., Bastrop, who took over the directorship of health units in Morehouse and Union parishes.—— Dr. Roscoe P. Kandle, director of the bi-parish health unit composed of Winn and Grant parishes, has been appointed regional director of the northern district of public health in Louisiana, with offices located in Monroe.——Dr. John G. Norris, Farmerville, has been placed in charge of the Vernon Parish health unit.

Special Society Elections.—Newly elected officers of the Louisiana State Pediatric Society include Drs. Julian Graubarth, New Orleans, president; Wyeth B. Worley, Shreveport, vice president, and William C. Rivenbark, New Orleans, secretary-treasurer.—— The Louisiana State Coroners' Association recently elected Drs. John B. Hall, Benton, president and Charles J. Barker, Thibodaux, and Robert F. DeRouen, New Iberia, vice presidents; Luther L. Ricks, Independence, was reelected secretary.——Dr. William R. Mathews, Shreveport, was elected president of the Louisiana Association of Pathologists recently, Dr. Andrew V. Friedrichs vice president and Dr. Albert E. Casey, New Orleans, secretary.

MICHIGAN

Annual Spring Clinic.—The Interne Alumni Association of Providence Hospital, Detroit, sponsored its annual spring clinic, May 15. The program included the following: Drs. Willard O. Thompson, Chicago, on "Diagnosis and Treatment of Hypogonadism"; George Crile Jr., Cleveland, "Hyperthyroidism"; Benjamin Levine, Cleveland, "Local Application of Sulfanilamide and Its Compounds in Dermatology," and Alphonse M. Schwitalla, S.J., St. Louis, "Society's Debt to the Doctor."

Society News.—Dr. James Dellinger Barney, Boston, discussed problems of renal stone before the Kalamazoo Academy of Medicine, May 20.——Dr. Bernard I. Comroe, Philadelphia, addressed the medical section of the Wayne County Medical Society, Detroit, May 12, on "Arthritis and Allied Conditions."—— Dr. Charles E. Black, Lansing, discussed "Prevention, Early Laboratory Diagnosis and Treatment of Shock" before the Shiawassee County Medical Society in Owosso, May 15.

Trudeau Medal Awarded to Dr. Alexander.—The Trudeau Medal of the National Tuberculosis Association has been awarded to Dr. John Alexander, professor of surgery, University of Michigan Medical School, Ann Arbor, and surgeon in charge of the division of thoracic surgery of the university hospital. Dr. Alexander graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1916. He is chief surgeon of the Michigan State Sanatorium and a member of editorial boards of numerous journals devoted to his specialty. In 1925 he received the Samuel D. Gross prize of the Philadelphia Academy of Surgery and in 1930 the Henry Russel award of the University of Michigan. He was president of the American Association for Thoracic Surgery in 1935 and of the Michigan Tuberculosis Association, 1938-1939. In 1932 he was chairman of the section on surgery of the Michigan State Medical Society. He is the author of "The Surgery of Pulmonary Tuberculosis," published in 1925, and of "The Collapse Therapy of Pulmonary Tuberculosis," 1937.

MINNESOTA

Personal.—Dr. Chester A. Stewart, who has accepted an appointment as professor of pediatrics at Louisiana State University School of Medicine, New Orleans, was guest of honor at a dinner given by the staff of Swedish Hospital, Minneapolis, recently.——Dr. Donald W. Pollard was recently named superintendent of the Minneapolis General Hospital; he had been acting superintendent.——Dr. Floyd M. Feldman, director of rural health, district number 3 of the state department of health with offices in Rochester, has been appointed health officer of Rochester, according to *Minnesota Medicine*. He has been serving as part time deputy city health officer since January. He succeeds Dr. Thomas B. Magath, who resigned.

MISSISSIPPI

Health Officer Twenty-Six Years.—Dr. Daniel J. Williams, Gulfport, health officer of Harrison County since the unit was first established twenty-six years ago, retired from the position, June 30, on the expiration of his term. He has been succeeded by Dr. Everett W. Ryan, Charleston, health officer of Tallahatchie County. According to newspaper reports, Dr. Williams is said to be the oldest public health service county unit director in the United States in point of continuous service.

NEW JERSEY

Dr. Overton Resigns.—Dr. Frank Overton, Trenton, has resigned as editor of the *Journal of the Medical Society of New Jersey* and Dr. Henry A. Davidson, Newark, has been appointed part time editor for a year. Dr. Overton, now 73 years old, has been editor of the New Jersey journal since 1934 and previously was editor of the *New York State Journal of Medicine*, 1924-1933.

County Society One Hundred and Twenty-Five Years Old.—The Middlesex County Medical Society celebrated its one hundred and twenty-fifth anniversary, June 11, with a dinner at the Walker-Gordon Farm near Plainsboro. Dr. William J. Carrington, Atlantic City, was toastmaster and the speakers included Drs. Joseph H. Kler, New Brunswick, on "The Position of the Middlesex County Medical Society in the History of the Medical Profession in the State of New Jersey" and Dr. Watson B. Morris, Springfield, immediate past president of the Medical Society of New Jersey.

NEW YORK

Personal.—Dr. Arthur J. Bedell, Albany, received the honorary degree of doctor of science at the annual commencement of Hobart College, Geneva, May 26, and also from the University of Colorado, Boulder, June 9.——Dr. Herbert C. Soule, Rochester, has been appointed medical director of the Hillside Children's Center, Rochester.——Mr. Willis H. Carrier, Syracuse, chairman of the board of the Carrier Corporation of Newark, N. J., recently received the first Frank P. Brown Medal from the Franklin Institute, Philadelphia, as "a pioneer in the creation and development of the science of air conditioning." The medal, awarded for the first time, is to be given for improvements in the building and allied industries.

New York City

Faculty Changes at Columbia.—Dr. Alson E. Braley, Detroit, has been appointed assistant professor of ophthalmology at Columbia University College of Physicians and Surgeons. Dr. Braley graduated from the State University of Iowa College of Medicine, Iowa City, in 1931. Dr. Reuben Ottenberg, assistant clinical professor of medicine, has been made assistant professor.

Society News.—Drs. Benjamin Jablons and Frederick M. Allen addressed the Medical Society of the County of New York, May 26, on "Renal Extract in Hypertension" and "Clinical and Experimental Hypertension" respectively.——Dr. Francis Peyton Rous addressed the New York Pathological Society, May 22, on "The Cancer Problem Now: A Roving Commentary."——Dr. Ashton Graybiel and Ross A. McFarland, Ph.D., Boston, addressed the New York Heart Association and the section of medicine of the New York Academy of Medicine, May 20, on clinical and physiologic aspects, respectively, of "The Neurocirculatory Adjustments During Flying."——Dr. Abner I. Weisman and Mr. C. W. Coates addressed the New York Endocrinological Society, May 28, on "The Frog (Xenopis) Test and a Rapid Diagnostic Test for Early Pregnancy" and Dr. George B. Dorff, "Sex and Growth Relationship in Children."

NORTH DAKOTA

Special Society Meeting.—Dr. Albert E. Spear, Dickinson, was elected president of the North Dakota Academy of Ophthalmology and Oto-Laryngology at the annual meeting in Grand Forks, May 20. Dr. Le Roy G. Smith, Mandan, was elected vice president and Dr. Frederick L. Wicks, Valley City, secretary. The guest speaker was Dr. Kinsey M. Simonton, Rochester, Minn., on "The Symptom of Dizziness: Its Significance in General Practice."

OHIO

State Conference on Nutrition.—A conference for professional persons interested in problems of nutrition in defense was to be held at Ohio State University, Columbus, June 17-19. Speakers included Conrad A. Elvehjem, Ph.D., professor of agricultural chemistry at the University of Wisconsin, Madison; Lydia J. Roberts, Ph.D., professor and chairman of the department of home economics, University of Chicago; Sybil L. Smith, A.M., Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C., and Miss Margery Vaughn, Federal Security Agency, Washington. Dr. Jonathan Forman, Columbus, represented the Ohio State Medical Association.

Society News.—Drs. Philip E. Piker and Howard D. McIntyre, Cincinnati, addressed the Academy of Medicine of Cincinnati, May 20, on "Symptoms of Alcoholism" and "Clinical Studies in Multiple Sclerosis" respectively.——Dr. Samuel E. Flook, Dayton, addressed the Montgomery County Medical Society, Dayton, May 16, on "Diagnosis of Hip Disease in Children."——Dr. Newton W. Kaiser, Toledo, addressed the Wood County Medical Society, Bowling Green, May 15, on "Common Psychoses and Their Interest to General Practitioners."——Dr. Charles F. Bowen and Lieut. Col. Howard E. Boucher, Columbus, addressed the Guernsey County Medical Society in Cambridge, May 15, on "Cancer and Colored Photography" and on the duties of medical examiners, respectively.——Dr. John D. Reichard, U. S. Public Health Service Hospital, Lexington, Ky., addressed the Cincinnati Society of Neurology and Psychiatry, May 27, on clinical neurology, presenting a motion picture.

OKLAHOMA

State Medical Election.—Dr. James D. Osborn Jr., Frederick, was chosen president-elect of the Oklahoma State Medical Association at the annual meeting in Oklahoma City, May 19-21, and Dr. Finis W. Ewing, Muskogee, was installed as president. Dr. Charles R. Rountree, Oklahoma City, was elected vice president and Dr. Lewis J. Moorman, Oklahoma City, was elected secretary. The 1942 meeting will be in Tulsa.

Society News.—Dr. Tazwell D. Rowland, Shawnee, addressed the Pottawatomie County Medical Society, Shawnee, June 21, on "Local Use of Sulfanilamide."——Donald B. McMullen, D.Sc., and Francis C. Lawler, D.Sc., Oklahoma City, addressed the Oklahoma County Medical Association in Oklahoma City, May 27, on "Incidence of Intestinal Parasites in School Children" and "Incidence of Monilia in the Gastrointestinal Tract" respectively.

OREGON

Instruction in Social Hygiene.—The Oregon State System of Higher Education has received a bequest of $400,000 from the late Dr. Ellis C. Brown, Portland, "to carry on the instruction and education of the boys and girls and young people of the state of Oregon in respect to what is commonly called 'social hygiene'," under the direction of the executive head of the University of Oregon. In accordance with the terms of the will, the position of director of public health and preventive medicine has been established at the University of Oregon Medical School, Portland. The director is to spend one third of his time in teaching at the university and the remainder in educational work throughout the state. Dr. Brown died on July 1, 1939.

PENNSYLVANIA

District Meetings.—The annual meeting of the Sixth Councilor District of the Medical Society of the State of Pennsylvania was held in Huntingdon, June 25. Dr. Wendell J. Stainsby, Danville, spoke on "Uses and Abuses of Sulfanilamide and Its Derivatives in the Treatment of Infectious Diseases" and Cloyd S. Harkins, D.D.S., Osceola Mills, "The Responsibility Dentists Must Assume on the Oral Cripple." Dr. Francis F. Borzell, Philadelphia, president of the state society, discussed "Medical Preparedness."——Dr. Charles L. Brown, Philadelphia, was the guest speaker for the scientific program of the Fourth Councilor District at its annual meeting, June 12, at the Shamokin Valley Country Club, between Shamokin and Sunbury. He discussed diet in treatment of chronic diseases and vitamin deficiencies. Dr. Borzell also spoke at this meeting on medical preparedness.

Philadelphia

Defense Council Meeting.—Dr. Philip D. Wilson, New York, addressed a meeting of the health, hospitals and sanitation committee of the Philadelphia Council of Defense, July 9, on "Medical War Work in England." Dr. Hubley R. Owen, director of public health of Philadelphia, is chairman of the defense council.

Lectures at Mercy Hospital.—The eighth annual series of postgraduate lectures at Mercy Hospital were presented May 19, 21 and 23. The speakers were:

Dr. Walter Estell Lee, Surgical Problems of Modern Warfare.
William A. Wolff, Ph.D., Practical Use of Transfusions.
Dr. Ferdinand Fetter, Some Medical Problems of Troop Mobilization.
Dr. William L. Martin, Treatment of Infections.
Dr. Edward A. Schumann, Indications and Technic of Elective Cesarean Section under Local Anesthesia.
Dr. Merrill H. Curtis, Washington, D. C., The Eye in Diabetes.

RHODE ISLAND

Society News.—Dr. Louis Goodman, Howard, reported a clinical and pathologic study of an outbreak of typhoid in a state mental hospital in a paper presented before the Providence Medical Association, June 2, and Dr. Eric P. Stone spoke on "Comparative End Results of Transurethral and Surgical Prostatectomies."

SOUTH CAROLINA

Pediatric Meeting.—The annual meeting of the South Carolina Pediatric Society was held in Columbia, May 16, with Dr. Thomas Campbell Goodwin, Baltimore, as the guest speaker on the effect of scurvy, lead poisoning, bismuth poisoning, phosphorus poisoning and blood dyscrasias on the skeletal system. Officers elected were Drs. Isaac H. Grimball, Greenville, president; Lonita M. Boggs, Greenville, vice president, and Hilla Sheriff, Columbia, secretary.

Dr. McLeod Receives American Legion Award.—The South Carolina department of the American Legion awarded its distinguished service plaque for 1941 to Dr. Frank H. McLeod, who has practiced in Florence for fifty years. In 1906 he established the Florence Infirmary, which has developed into the present McLeod Infirmary of two hundred beds. Dr. McLeod graduated from the University of Tennessee College of Medicine in 1888 and went to Florence in 1891. He has held many offices in local medical societies and was president of the South Carolina Medical Association in 1916. At one time he was editor of the *Journal* of the South Carolina Medical Association. The American Legion plaque has been given each year since 1927 to a South Carolina man or woman who has rendered distinguished unselfish service to the state. The presentation was made at Myrtle Beach, June 16.

TENNESSEE

Society News.—Dr. Brien T. King, Seattle, addressed the Nashville Academy of Medicine and the Davidson County Medical Society, Nashville, May 26, on bilateral abductor cord paralysis.——A symposium on peptic ulcer was presented before the Knox County Medical Society, Knoxville, June 3, by Drs. Robert P. Layman, John R. Hill and Charles F. Clayton.

Public Health Association Officers.—Dr. William H. Enneis, health officer of Knoxville, was chosen president-elect of the Tennessee Public Health Association at the annual meeting in Nashville in May and Dr. Lloyd M. Graves, Memphis, became president. Dr. John J. Lentz, Nashville, retiring president, automatically became vice president and Dr. Robert H. Hutcheson, Nashville, was reelected secretary.

Regional Meeting.—The West Tennessee Medical and Surgical Association held its annual meeting in Dyersburg, recently, with Dr. Robert McCombs, Philadelphia, as the guest speaker on "Diagnosis, Prognosis and Treatment of Rheumatic Heart Disease." Other speakers included Drs. Frank Thomas Mitchell, Memphis, on "The Sulfonamides in Pediatric Practice"; John J. Shea, Memphis, "Management of Fractures of the Face," and Duncan Eve, Nashville, "Fractures." Dr. Virgil E. Massey, Huntingdon, was elected president.

TEXAS

Hospital News.—The Methodist Hospital of Dallas recently opened a new wing with a capacity of from 60 to 75 patients. New quarters for interns, library, staff lounge and game room, school rooms for nurses and a laboratory have also been added to the hospital's facilities.

Society News.—Drs. Milford O. Rouse, Dallas, and Emmette P. Goode, Greenville, addressed the Hunt-Rockwall-Rains Counties Medical Society, Greenville, June 3, on "Hypertension" and "So-Called Nervous Indigestion" respectively.——Drs. Horace A. Baker, Wills Point, and Fred G. Evans, Grand Saline, addressed the Van Zandt County Medical Society, June 9, on "Thymus Enlargement and Treatment" and "Upper Respiratory Diseases, Their Diagnosis and Treatment" respectively.

VIRGINIA

New Health Officer for Richmond.—Dr. Millard C. Hanson, director of the syphilis control program in the health department of Pittsburgh, has been appointed health officer of Richmond, the first full time health officer the city has had since 1924, newspapers report. Dr. Hanson served as health officer of Mansfield and Richmond County, Ohio, and of the city of Toledo before going to Pittsburgh in 1940.

Meeting of Specialists.—Dr. Guy R. Fisher, Staunton, was named president-elect of the Virginia Society of Ophthalmology and Otolaryngology at the annual meeting in Richmond, recently, and Dr. Mortimer H. Williams, Roanoke, became president. Dr. Meade C. Edmunds, Petersburg, was elected secretary. Drs. James A. Babbitt and Edmund B. Spaeth, Philadelphia, were the guest speakers on "Geriatrics and Its Role in Otology" and "Surgical Treatment of Neurofibroma of the Orbit" respectively.

HAWAII

Medical Meeting and Election.—Dr. Alfred L. Craig, Honolulu, was elected president of the Hawaii Territorial Medical Association at the recent annual meeting and Dr. Rolla O. Brown, Honolulu, secretary. Among the speakers were:

Dr. Marion A. Blankenhorn, Cincinnati, Specific Therapy of Lobar Pneumonia; and Early Diagnosis of Gastric Malignancy.
Drs. Stewart E. Doolittle and Irvin L. Tilden, Honolulu, Rheumatic Heart Disease in Hawaii.
Lieut. Comdr. French R. Moore, Pearl Harbor, Clinical Evaluation of the Use of Sulfanilamide.
Dr. Forrest J. Pinkerton, Honolulu, Diseases of the Eye Photographically.
Dr. Rogers Lee Hill, Honolulu, Lobectomy for Bronchiectasis.

PUERTO RICO

New Division of Nutrition.—The Puerto Rico Department of Public Health has established a division of nutrition functioning under the bureau of maternal and child hygiene. The nutritionist in charge will be available for consultation with other divisions of the department and with other groups and agencies as well as with individual patients of the department's clinics. Tables showing the nutritive value of foods used in Puerto Rico are to be prepared, and low cost menus will be distributed. The nutritionist will also be available for talks before various groups and to help others prepare such talks.

GENERAL

Diploma Missing.—Dr. Homer F. Weir, Chicago, reports the theft of his diploma from the University of Illinois College of Medicine, Chicago, issued to him in 1940. Dr. Weir stated that the diploma was left in a shop on Clark Street near Fullerton Parkway and was taken from there, April 1.

Appointment to Revision Committee, U. S. Pharmacopoeia.—Mr. Joseph Rosin, vice president and chief chemist of Merck and Company, Rahway, N. J., has been appointed a member of the U. S. Pharmacopoeia Committee of Revision to succeed the late Charles B. Jordan, D.Sc., professor of pharmaceutical chemistry and dean of the School of Pharmacy, Purdue University, Lafayette, Ind. Mr. Rosin was a member of the committee during the 1930-1940 period.

Board Examination in Urology.—The American Board of Urology will hold its next meeting for the examination of candidates in Chicago in February 1942. The fifty case histories of major urologic problems must be received by the secretary of the board on or before November 1. The written examination will be given simultaneously in various cities in December. Inquiries may be addressed to the secretary, Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, Minneapolis.

New Group for Clinical Research.—The American Federation for Clinical Research was organized at Atlantic City, May 5, and the following officers elected, among others: Drs. Maurice A. Schnitker, Toledo, Ohio, president; Arthur J. Merrill, Atlanta, vice president; Thomas M. Durant, 3401 North Broad Street, Philadelphia, secretary-treasurer. It was decided to hold the 1942 meeting in St. Paul, the date to be announced later.

Postgraduate Institutes in Psychiatry.—The fourth regional postgraduate institute for state mental hospitals sponsored by the American Psychiatric Association will be held at the Western State Hospital, Fort Steilacoom, Wash., September 1-13. Those interested in attending should communicate with Dr. William N. Keller, superintendent at Fort Steilacoom, or with Dr. Franklin G. Ebaugh, chairman of the committee on psychiatry in medical education, Colorado Psychopathic Hospital, Denver. The institutes are financed by the Rockefeller Foundation. The third was held at the South Carolina State Hospital, Columbia, in April.

Meeting on Psychopathology.—The thirty-first annual meeting of the American Psychopathological Association was held at Atlantic City, June 8-9. One session was devoted to military discussions with the following speakers:

Dr. George S. Sprague, White Plains, N. Y., Morale and Its Psychopathology.
F. Lyman Wells, Ph.D., Boston, The Problem of Marginal Intelligence in Military Service.
Dr. Abraham Myerson, Boston, Personality and the Neuroses in Relation to the Draft.
Dr. Sidney I. Schwab, St. Louis, War Neuroses Then and Now.
Dr. Charles Macfie Campbell, Boston, Lawrence of Arabia.
Dr. Harry M. Murdock, Towson, Md., Possible Contributions of World War II to Psychiatry: A Forecast.

Radio Programs on Nutrition.—Two radio programs dealing with nutrition are being broadcast weekly by the National Broadcasting Company. "Listen America," sponsored by the Women's National Emergency Committee, is heard at 8:30 p. m., Central Standard Time, over the Red network. It will continue through July and August. The "national farm and home hour," a program of the U. S. Department of Agriculture heard at 10:30 a. m. Central Standard Time over the Blue network of N. B. C., is presenting a series of talks on nutrition. Speakers for the next four weeks will be: Miriam Birdseye, U. S. Department of Agriculture, Washington, D. C., July 22 "Rural People Build for Better Nutrition"; Lela Booher, M.D., U. S. Department of Agriculture, Washington, July 29, "The Food You Eat and the Will to Do"; Helen Mitchell, Ph.D., Federal Security Agency, Washington, August 5, "Food Needs of Women," and Dr. Mitchell, August 12, "Good Nutrition Makes Life Longer and Happier."

Fatal Accidents in 1939.—The U. S. Bureau of the Census has issued a report on fatal accidents in the United States in 1939 showing a slight decrease from the preceding year. There were 92,623 deaths from accidental causes, a rate of 70.9 per hundred thousand, as compared with a rate of 72.3 in 1938. Excluding the rates for 1921 and 1922, the 1939 rate was the lowest ever recorded for the death registration area, the report said. The highest rates occurred in the Rocky Mountain and Pacific states. Nevada had the highest, 203.1 per hundred thousand and Rhode Island the lowest, 51.3. The five leading types of accidents accounted for 75 per cent of all the acci-

dental deaths. These were motor vehicle accidents, 30,468; injury by falls, 22,878; drowning, 5,450; burns, 4,831, and railway accidents (except collisions with motor vehicles), 3,394. In general, it appears that accident fatalities are relatively more frequent among older persons, 51 per cent having occurred in persons over 45 years old. Certain types of accidents are more frequent in the younger age groups, such as air transport accidents, about 85 per cent of which occurred to persons between the ages of 20 and 44. The most frequent cause of accidental death among infants in 1939 was mechanical suffocation, which caused 1,008 deaths of babies under 1 year of age. This report also includes data on the trend of accident mortality in the expanding death registration area from 1900 to 1939 and the trend and distribution of deaths from accidents during the past ten years for the individual states and for cities with populations of 100,000 or more.

Lalor Foundation Fellowships.—The board of trustees of the Lalor Foundation has announced the following fellowship awards in chemical and biochemical research for the academic year 1941-1942, among others: $2,000 to Frederick W. Barnes Jr. to work at Columbia University under Hans T. Clarke, D.Sc., on the investigation of intermediary metabolism with the aid of isotopes; $2,500 to A. Calvin Bratton, to continue work at Johns Hopkins University School of Medicine, Baltimore, under Dr. Eli K. Marshall Jr. on chemical aspects of chemotherapy of compounds of the sulfanilamide type (this award is for $1,250 a year for two years, namely, 1941-1942 and 1942-1943); $2,000 to Robert B. Carlin, to work at the University of Illinois, Urbana, under Roger Adams, Ph.D., on the determination of the structure of the alkaloid extracted from Crotalaria spectabilis and of analogous alkaloids from various Senecio species. Since the organization of the foundation in 1935 thirty awards, aggregating $63,500, have been granted.

Special Society Elections.—Dr. Edwards A. Park, Baltimore, was chosen president of the American Pediatric Society, May 23, and Dr. Hugh McCulloch, St. Louis, was reelected secretary.——Philip Bard, Ph.D., Baltimore, was elected president of the American Physiological Society at its meeting in April; Dr. Carl J. Wiggers, Cleveland, was elected secretary. The 1942 meeting will be in Boston, April 7-11.——Officers of the American Society for Clinical Investigation include Drs. William Dock, San Francisco, president; Joseph M. Hayman Jr., Cleveland, vice president, and Eugene M. Landis, Charlottesville, Va., reelected secretary. The next annual session will be in Atlantic City.——The American Society of Biological Chemists chose the following officers recently: Rudolph J. Anderson, Ph.D., New Haven, president; Edward A. Doisy, Ph.D., St. Louis, president-elect and Arnold K. Balls, Ph.D., Washington, D. C., secretary. The next annual session will be held in Boston, April 7, 1942.

FOREIGN

Medical Aid to China.—Mobile medical units are the essential elements in the medical service operated by the Chinese Red Cross for the Chinese Army, United China Relief, New York, said in a recent report. The mobile unit plan grew out of the tactics used in the war, in which troops are scattered over a broad area, sometimes 100 miles deep. As all roads that could be used by the Japanese mechanized forces were destroyed, ambulances were useless in many areas. Dr. Robert K. S. Lim, who was professor of physiology at Peiping Union Medical College, Peking, when the war broke out, established mobile operating, nursing and preventive units. Dr. Lim has his headquarters at Kweiyang, where he has built a medical center. With only five thousand qualified physicians in all of China, Dr. Lim has been forced to use thousands of untrained persons as dressers. Seven emergency medical training centers have now been established to train these helpers in nursing and preventive medicine. About 85 per cent of Dr. Lim's medical supplies and more than 90 per cent of his ambulances and supply trucks have been supplied by overseas Chinese and donations from abroad. The American Bureau for Medical Aid to China has sent one hundred and fifty-nine ambulances and has made regular shipments of drugs and vaccines. It has provided a vaccine-producing plant for the medical center at Kweiyang and has supplied training schools with roentgen ray equipment, microscopes, a chemical laboratory, books and instruments, and has financed construction of five health centers. The bureau, through United China Relief, has begun a program of sending $5,000 a month to support Dr. Lim's work and to supplement the contributions of the American Red Cross. Another serious need reported to United China Relief is a psychiatric hospital in West Chinia to care for victims of bomb and shell shock.

Government Services

Examination for Junior Public Health Nurses

In addition to other government nursing positions now open, the U. S. Civil Service Commission announces examinations for the position of junior public health nurse, for which no experience is required. Public health nurses are especially needed in the parts of the country where large defense industries are located. Appointments will also be made for the Indian Field Service. The salary is $1,800. Applications will be rated as received at the office of the commission in Washington, D. C., until further notice. Information may be obtained at any postoffice.

Navy Receives Medal for Life-Saving Devices

The Elliott-Cresson Gold Medal of the Franklin Institute of the State of Pennsylvania, Philadelphia, was recently awarded to the United States Navy for its work in the development of the "iron lung" and the submarine rescue chamber. Hon. Ralph A. Bard, Assistant Secretary of the Navy, who received the medal for the Navy, said that no one person in the Navy or any employee was directly responsible for the development of the life-saving apparatus. The medal will remain on display at the Naval Academy Museum, Annapolis, Md.

The submarine "lung," exhibited by the Navy at the recent annual session of the American Medical Association in Cleveland, is designed for individual escape from a submerged submarine. It consists of a rubber bag filled with oxygen and containing a canister of soda lime. Attached to this is a mouthpiece and a special arrangement of valves by means of which the wearer inhales oxygen from the bag and exhales through the soda lime to remove carbon dioxide. It has a vent valve at the lower edge of the bag that closes with sea pressure and opens with increased tension. This permits the excess air in the human lungs and in the bag to escape as the wearer ascends to the surface. There is a cutoff valve by which the air can be cut off when the man reaches the surface and the appliance becomes a life preserver.

The steel rescue chamber is 10 feet high with a diameter of 93 inches at the top and 60 inches at the bottom. It is open at the bottom and is fastened to a hatch on the hull of the submarine, through which the passengers enter. It will carry at least seven men under emergency conditions.

Research directed toward the development of these devices was begun in 1927. Experimental escapes have been effected with the lung, but it has not yet been used in actual rescue.

Hat Industry Cooperates in Eliminating Mercurial Compounds

Representatives of the hat industry recently approved regulations proposing to eliminate poisonous mercurial compounds from the manufacture of fur felt. These compounds have long been considered one of the most dangerous health hazards to workers exposed to mercury dust or vapor. Connecticut, where two thirds of the hat industry is located, showed an early interest in the mercury poisoning problem and has already taken steps to eliminate the hazard. In 1934 the U. S. Public Health Service made a survey of chronic mercurial poisoning in the hatters' fur-cutting industry, at the request of the Hatters' Fur Cutters Association. This study was supplemented by another study last year. Both studies showed that the complete solution of the problem depended on the substitution of nonpoisonous compounds for mercury in the processing of fur. The exposure of workers to mercury vapor usually begins with the drying and piling of the fur after it has been treated with mercury nitrate to form a firm felt. Treatment of the fur with the mercury nitrate is called "carroting" because of the carrot-yellow color of the treated skins. Following this treatment, all workers who handle the fur through its various stages of preparation until it finally is shaped into hats are exposed to mercury vapor or dust. Adequate substitutes which have been developed by industrial chemists are believed less expensive than mercury and do not require engineering and medical safeguards for workers. About 60 per cent of the fur felt industry already has eliminated mercury from the manufacturing processes. The U. S. Public Health Service studies showed that workers exposed to mercury dust or vapor developed irritability, digestive disturbances, insomnia, loss of appetite, tremor, loss of weight and sore mouth.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 29, 1941.

Medical Planning Commission

The first meeting of the Medical Planning Commission set up by the British Medical Association with the cooperation of the medical colleges and corporations to study wartime developments and their effects on the country's medical services, both present and future, has been held. In welcoming the more than sixty members present of the sixty-seven which constitute the commission, the chairman, Mr. H. S. Souttar, said that no body had ever met which so fully represented the medical practice of the country in all its varied aspects. The problems of medical service after the war would be complex and difficult, and on their solution would depend the health of the nation. The profession desired that every individual should have at his service, whatever his economic status, all necessary medical resources. The country had gone a long way toward achieving that, for the whole industrial population was included under national health insurance. There was a strong feeling that the service enjoyed by the worker should be extended to his dependents, which would mean that nearly 80 per cent of the population would be included. If, as had been suggested, the insurance income limit was raised, the figure would become 95 per cent. Moreover, there was a strong demand that a consultant and specialist service, with full hospital facilities, should be added. This could be met by establishing a whole time state medical service. This would be a complete break with the traditions of medical practice in Britain but it must be carefully examined. On the other hand, the present service might be developed. On one point they would all agree—that everything should be done to maintain the close personal relation between doctor and patient which had been characteristic of British medical practice.

Lord Dawson said that the commission should avoid trying to put up something brand new or something which aimed at too great completeness. The practice of medicine had been built up generation by generation, and it was only because medical knowledge had so far outstripped the organization of practice that it was necessary to review the subject. In trying to plan to meet the needs of modern society with all its economic difficulties and at the same time to recognize the great growth of knowledge, they should bear in mind "the inevitability of gradualness." The most important question was the regionalization of hospitals and health services. The practice of medicine in all its branches must become increasingly institutional, partly because of the growth of knowledge and the need for team work and partly because the best that medicine could provide should be made available to every citizen. Medicine was a difficult profession to plan for, because while planning the fabric they must preserve freedom of thought and initiative. It was not easy to apply collectivism to the fabric and yet maintain individualism in human relations. Another big question was the bridging of the gap between preventive and curative medicine. If these basic principles were settled first, all other things would be added to them.

The work of the commission would be carried out mainly in committees, which would have considerable freedom of action and would coapt representatives, not of interests, but of different aspects of knowledge and experience. He liked to think of the medical profession filling its great place in the body politic. No other profession had widened in its generation to anything like the extent medicine had. The whole of the problems concerned with constructive health had become part of medical thought in relatively recent years. They were not yet fully accepted, but it was largely because of their gradual acceptance that the commission had been formed to undertake a task of integration which he hoped would result in an even greater profession than they had the honor of serving.

The commission agreed to establish five committees, dealing respectively with general practice, special practice, public health, hospitals and the teaching hospitals, and a sixth, a coordination committee, which would integrate the reports of the others into one draft report, which would be submitted for criticism to the bodies represented and to the profession generally.

Sir D'Arcy Power

The death of Sir D'Arcy Power at the age of 85 years has removed a figure unique in the medical life of this country and well known all over the medical world. He combined surgical with literary eminence. Surgeon, medical historian, biographer, bibliographer and librarian, he spent his long life in the devoted service of the profession. The son of Henry Power, ophthalmic surgeon to St. Bartholomew's Hospital, he was derived from Irish, Dutch and Yorkshire strains. To the first has been attributed his versatility and remarkable courtesy. He was educated at Oxford, where after a distinguished career he became lecturer on physiology. In 1878 he entered St. Bartholomew's Hospital, with which he was identified for the rest of his life. He was curator of the museum from 1889 to 1901 and demonstrator of practical and operative surgery from 1901 to 1904. In 1898 he was elected assistant surgeon and in 1904 became full surgeon. His reputation was that of a good all round surgeon, at his best in an emergency operation. In 1912 he became a member of the Council of the Royal College of Surgeons, which he represented on many important bodies, such as the Imperial Cancer Research Fund, the International Historical Congress, the centenary celebrations of the Académie de médecine and the opening of the Royal Australian College of Surgeons. The office of honorary librarian was created for him at the College of Surgeons. No one else had such a knowledge of the treasures of its library or spent so much time in its precincts.

But it is as a writer th he has the most claims to remembrance. His first book was a manual for the physiologic laboratory, in which Vincent Harris collaborated. His first venture in the history of medicine, on which he became the leading authority of his day, was his edition of South's "Memorials of the Craft of Surgery." A long series of unsigned historical articles in the *British Medical Journal* followed, and many scholarly contributions, published under "Nova et Vetera," were from his pen. In 1931, on his seventy-fifth birth day, he was presented, on the initiative of the Osler Club, with a volume of his "Selected Writings," to which was appended a bibliography of his contributions to literature running to more than six thousand entries. Many of these were short "lives" of medical and other worthies in the Dictionary of National Biography. He also wrote numerous articles on historical subjects connected with medicine, especially of the sixteenth to eighteenth centuries in England. In conjunction with W. G. Spencer and G. E. Gask he revised the biographic notices of the fellows of the Royal College of Surgeons. His clinical writings also were excellent. He wrote extensively on cancer and on the surgery of the abdomen. In 1895 he published "Surgical Diseases of Children" and in 1915 a primer on "Wounds in War." He was co-author of a "Handbook of Surgical Pathology" and work on "Diseases of Joints."

No man was better known in the medical life of London or in the profession abroad. He was one of the secretaries of the National Committee of the four International Congresses of Medicine held in various capitals from 1900 to 1909. He was vice president of the 1921 London meeting of the International Society of the History of Medicine and honorary president of the Geneva meeting in 1925 and honorary president of the

International Society of Surgery meeting in 1925. In 1924 he went to America, where he was for two months visiting surgeon in chief of the Peter Bent Brigham Hospital, Boston. He was made honorary fellow of the American Surgical Association and delivered an address at Baltimore on "How the Tradition of British Surgery Came to America." No one who ever met him will forget his cheery smile and unfailing courtesy, not the courtesy of which the man of the world is master for the occasion but something which was part of his nature and was extended equally to high and to low.

BUENOS AIRES

(From Our Regular Correspondent)

May 7, 1941.

School Dispensaries

The national health department in Buenos Aires has organized a dispensary service in schools situated within the sparsely settled regions of the interior of the country. This service is intended not only for emergency cases but for the treatment of the most common diseases occurring in school children, such as trachoma, malaria, ankylostomiasis and endemic goiter. While the measures enabling this service do not solve the problem of medical aid, they make possible treatment which otherwise would not be available to those who need it. The medicine chests are not uniform but are adapted to the needs of the community. Four different units have been instituted, a standard unit and three units intended for endemic regions. All of them contain the same surgical material for emergency cases and medicaments required for internal medication, for skin diseases, for convalescent persons and for endemic fever. Every unit contains a list of the medicines and directions for their use.

The Hygiene of Milk

A national conference on the hygiene of milk is planned for this year, arranged by the division of mother and child welfare of the national health department. In the past only local needs were considered in the distribution of milk. A national policy, however, dealing with the nutrition of children seems called for. Statistics prepared by the national health department demonstrate that the quality of milk supplied plays an important part in the alimentary diseases of children. Milk insufficiency likewise was found to contribute to the mortality of children. The whole problem of the hygienic and sanitary treatment of milk intended for public consumption seems to require further study and regulation. The impending conference is to clarify the situation.

National Institute for Public Health in Lima

The National Institute for Hygiene and Public Health in Lima, Peru, has existed in its present form since February 1938, when it succeeded to the activities formerly conducted by the institute for vaccine and serum therapy, by the laboratories for tuberculosis research and by the plague service. It contains divisions of pathology, bacteriology, biochemistry in connection with the hospital for infectious diseases, of immunology and of organotherapy with divisions for vaccines, serums and the control of foreign and domestic biologic products, a division of applied chemistry and pharmaceutics, administrative divisions and a library. The main function of the institute is research in human and animal pathology and the manufacture of biologic products. It trains the personnel and has facilities for special investigations. The director is Dr. Telémaco Battistini; its board is presided over by the minister of the department of public health.

Training in Hygiene and Social Medicine

A two year training course in hygiene and social medicine was organized by the faculty of medicine of the University of Buenos Aires and put in operation in April of this year. It is directed by Prof. Alberto Zwanck, professor in the Institute of Hygiene and Social Medicine. The subjects for the first year are bacteriology, parasitology, physiology, physics and chemistry in their application to hygiene, statistics, the science of nutrition and public works sanitation. Those of the second year are epidemiology and prophylaxis, social economics and legislation, social hygiene and medicine and health administration. Practical work in the laboratory and in the field are part of the training, as well as practical studies connected with national and communal sanitary institutions. At the close of the two year training period a written paper is required on a subject of practical hygiene. Acceptance of this paper entitles the student to a diploma granted by the University of Buenos Aires and the title of "médico higienista."

The Institute for Radiology and Physical Therapy in Buenos Aires

The municipal Institute for Radiology and Physical Therapy, founded in 1925, is under the control of the public health department of the city, with Dr. A. Saralegui, professor of radiology and physical therapy in the faculty of medicine of Buenos Aires, as director. It has divisions of radiology, radium therapy, electrology, diathermy, light therapy, physical therapy and hydrotherapy. A sixty bed ward affords temporary hospitalization. The central portion of the structure has six stories and the wings three, thus making possible abundant light and air. The radiologic division commands eleven roentgenologic and three fluoroscopic chambers, each of which is designed for a special type of diagnosis, and no changes need be made in the position of the roentgen tubes. The roentgenologic division can accommodate one hundred persons within four hours. The division for electrodiagnosis and therapy contains fourteen rooms for the treatment of men and an equal number for the treatment of women and ten each for diathermy. Eight rooms are set aside for ultraviolet and infra-red treatments. The radiologic division possesses 2 Gm. of radium, distributed over three hundred and forty tubes and needles. An apparatus for teleradiotherapy is under construction. Facilities for the filing of the roentgenograms are thoroughly organized.

The forty-five physicians active at the institute meet once a month for a scientific session and publish the *Anales,* which appears every three months. Courses for physicians are given three days of the week. Two scholarships, open primarily to Pan American physicians and lasting nine months, are to be established.

Allergic Diseases in Argentina

Studies have been made by H. Walker, R. F. Carrón and H. Malvarez of the University of Córdoba on allergenic plants in Argentina which in part are not found in other countries. Some grasses are responsible for hay fever in Argentina which do not cause allergic reactions in other countries; plants of strong sensitizing properties found in other countries have little pathologic significance for Argentina. This difference in allergenic vegetation obviously affects the applicability to Argentina of tests and reactions employed in other countries. These authors discovered that certain plants, such as alfalfa and false acacia (Robinea pseudoacacia), have strong allergenic properties, though they were not so classified previously. Similarly, Celtis tala Gill and Celtis tala Sellowaina were found to possess a strongly sensitizing pollen somewhat similar to that of Ambrosia (ragweed) in North America. Celtis tala is encountered in large quantities in different regions of Argentina. In the districts studied by these investigators this plant was found, in a series of 70 cases, to provoke hay fever in 44 per cent and other respiratory disorders in 30 per cent.

Other investigators, including J. A. Bozzola, E. E. Bacigaluppi and L. R. Parodi, recently pointed out that the maple tree is the main cause of the seasonal disturbances found in

streets lined with maple trees. Of 2,900 persons who were questioned, 19 per cent stated that they were subject to ocular or respiratory disturbances at the time of the tree's greatest vegetative activity. The authors suggest that the trees be trimmed annually or be replaced by other trees free from allergenic effects.

NEWS FROM GERMANY

(Compiled from recent German periodicals)

Census of Venereal Diseases

The minister of the interior has ordered a census of new infections with syphilis, gonorrhea and chancroid (*Klin. Wchnschr.* **20**:544 [June 1] 1940). This census is to be carried out in the following manner: The physician records from June 1 to June 30, 1940, inclusive, every case of a new infection on a postal card provided for him by the aerztekammer and containing printed forms and a reply attachment. If a physician refers a patient to another physician, the assigning physician makes the report, if he has made the diagnosis. The report card of the physician to the respective aerztekammer must be mailed on July 1, 1940. The physician who has seen no new cases of venereal diseases during the period in question is obliged to make a report to this effect. The report cards of each aerztekammer are collected by the reichs (federal) aerztekammer. The statistical and scientific evaluation of the census will be made by the reichs health office.

Harvesting of Medicinal Herbs in 1941

On February 13 the reichs minister of education (*Deutsche med. Wchnschr.* **67**:472 [April 25] 1941) issued an order to the effect that in the future the Hitler youth is to collect the blossoms of linden trees, chestnuts and three different types of tea and medicinal herbs, the harvesting of which requires no special botanic knowledge. What plants are to be collected in the different parts of Germany will be determined and announced by the reichs office for economic cultivation after consultation with the youth leadership of the national socialistic party. Schools take over the collection of the crop of all other medicinal and tea herbs. The children who have been sent to camps in the country are to collect all types of medicinal and tea herbs after they have received proper instruction.

Churches and Public Hospitals

The activity of religious organizations in public hospitals, asylums and nursing homes has been regulated by an order of the reichs ministry of the interior dated April 9 (*München. med. Wchnschr.* **88**:512 [April 25] 1941). New additions are as follows: In case of visits and calls of pastors of the parochial districts in which the patient lives, the pastor is to be given access to the patient only if the patient desires it. . . . Inspection of the lists of patients of a hospital in order to ascertain the religious affiliation of the patients is not permitted. With the exception of emergency baptism, baptismal acts should not be performed in hospitals.

Prescription Required for Sex Hormones

On March 13 the reichs secretary of the interior (*Deutsche med. Wchnschr.* **67**:446 [April 18] 1941) issued a decree according to which substances with the action of female sex hormones, quinine preparations and other groups of medicines can be dispensed only on physician's prescription and by approved drug stores. The substances include female sex hormones (estrogenic hormone, corpus luteum hormone), vegetable products as well as synthetic and half synthetic substances that exert the action of the female sex hormones. Quinine and its compounds can be dispensed in the drug stores only on presentation of prescriptions bearing the date, directions for administration and signature of a physician, dental physician or veterinary—in the last instance only for use in animals.

Exempted from this regulation are preparations of female sex hormones that are to be fed to poultry, preparations for external application and preparations for internal use when the customary single dose does not contain more than 0.05 Gm. of quinine base—in case of compound medicaments not more than 0.1 Gm. of quinine base—and if this is indicated on the label. A term of six months is granted to comply with this labeling.

Substances and preparations which are intended for introduction into the vagina to counteract amenorrhea, even if they are designated as remedies for menstrual disturbances, can be dispensed by the drug stores for use by human subjects only on presentation of a prescription bearing date, directions for application and signature of a physician.

The repeated sale of the aforementioned products is permitted only if repetition is approved in the prescription and if it is indicated how often and to what date renewal is permissible.

Institute for Industrial Medicine

The minister of economics of the state of Württemberg (*München. med. Wchnschr.* **88**:436 [April 11] 1941) authorized the state medical officer for occupational diseases, Dr. Karl Humperdinck, to enlarge the former laboratory and testing station for industrial medicine to an institute for industrial medicine of the state of Württemberg. The knowledge of the influence of occupations on the health is to be increased. Dr. Humperdinck is also director of the section "Healthy Work Arrangement" in the district office of the German Work Front "Health and the Protection of the People."

Sale of Mineral Waters

The reichs commissioner for price control (*Klin. Wchnschr.* **20**:672 [June 29] 1940) has ordered a new uniform price fixation for more than a hundred German mineral waters. Hereafter, mineral waters will no longer be sold in taverns but only in drug stores and in stores specializing in mineral waters. Drug stores furnish information about names, action and prices of the mineral waters.

The Friedmann Tuberculosis Remedy

The Friedmann remedy has been rejected after decades of careful investigation by experienced specialists in tuberculosis (*München. med. Wchnschr.* **88**:512 [April 25] 1941). In the "Friedmann law suit" the worthlessness has been corroborated on the basis of detailed reports of qualified experts. The followers of Friedmann now use the old Friedmann remedy again under the new name of "utilin." The board of directors and the advisers of the German Tuberculosis Society unanimously reject the application of "utilin."

Committee to Supervise Vitamins in Sweden

In Stockholm (*Deutsche med. Wchnschr.* **67**:446 [April 18] 1941) a committee has been selected to supervise the systematic provision of the country with vitamins. This committee includes the director of the medical board, General Director Höjer, the director of the institute for the people's health, Prof. Ernst Abramson, an inspector of the government bureau of foods and Prof. Nils Hellström of the Industrial Commission.

Marriages

CHARLES A. WILLIS, Bainbridge, Ga., to Miss Jule Wilson in Montgomery, Ala., in April.

CARL WILLIAM KOERPER, Oakland, Calif., to Miss Ruth Walters of Americus, Ga., recently.

HARRY M. DICKMAN, Detroit, to Miss Dorothy Mae Houser of Jackson, Mich., March 27.

HARRY H. FARB, Newark, N. J., to Miss Florence Kaufman of Waterbury, Conn., June 29.

Deaths

Gilbert E. Seaman ✦ Madison, Wis.; Michigan College of Medicine and Surgery, Detroit, 1889; director, division of mental hygiene, state department of public welfare; member of the American Psychiatric Association; fellow of the American College of Surgeons; past president of the Association of Military Surgeons of the United States; delegate to the fourth International Congress of Military Medicine in Warsaw in 1927 and London in 1929; veteran of the Spanish-American and World wars; was awarded the Distinguished Service Medal, and the Legion of Honor of France; for many years surgeon general of the Wisconsin National Guard; member of the state board of education; a regent of the University of Wisconsin from 1911 to 1925, vice president from June 1919 to June 1920 and president from June 1920 to June 1921; at one time clinical professor of ophthalmology at the Wisconsin College of Physicians and Surgeons, Milwaukee; at various times medical superintendent of the Winnebago State Hospital and clinical director of the Shorewood Hospital-Sanitarium, Milwaukee; author of "Compendium for Medical Officers"; aged 71; died, May 25, at his home at Oconomowoc Lake of coronary occlusion.

John Ross Neal ✦ Chicago; Northwestern University Medical School, Chicago, 1909; secretary of the Illinois Professional Committee for Medicine, Department of Registration and Education; past president of the Federation of State Medical Boards of the United States, and the Illinois State Medical Society; served during the World War; medical director of the Alliance Life Insurance Company, Peoria, Ill.; dean of the Cook County Graduate School of Medicine; aged 61; died, July 1, in Grant Hospital of coronary thrombosis.

Leo Aloysius McClusky, Syracuse, N. Y.; Syracuse University College of Medicine, 1924; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; instructor of gynecology at his alma mater; attending gynecologist, General Hospital; assistant gynecologist, St. Joseph Hospital and the City Hospital; aged 40; died, May 1, of injuries received in an automobile accident.

Merle Edison Scott, Massillon, Ohio; Ohio State University College of Medicine, Columbus, 1920; member of the Ohio State Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; past president of the Stark County Medical Society; on the staff of the Massillon City Hospital; aged 51; died, May 20, of a self-inflicted bullet wound.

Eugene Smith Jr., Detroit; Detroit College of Medicine, 1912; member of the Michigan State Medical Society; for many years medical examiner for the Civil Service Commission; formerly surgeon for the police department; served during the World War; on the staffs of the Woman's Hospital and St. Mary's Hospital; aged 53; died, May 20, in the Harper Hospital of cirrhosis of the liver.

Halsey Jay Ball, Cape May, N. J.; New York Homeopathic Medical College and Hospital, New York, 1890; member of the Medical Society of the State of New York; for many years associated with the New York State Health Department as health officer of various towns and district health officer; retired Sept. 1, 1938, having reached retirement age; aged 72; died May 31.

Mack Voorhees Stone ✦ Assistant Surgeon, Lieutenant (j. g.) United States Navy, retired, Healdsburg, Calif.; University of California Medical Department, San Francisco, 1896; entered the navy Nov. 28, 1900 and retired Jan. 26, 1904 for incapacity resulting from an incident of the service; aged 65; died, May 14, of carcinoma of the liver.

Henry Frederick Rohrs, Napoleon, Ohio; Jefferson Medical College of Philadelphia, 1895; member of the Ohio State Medical Association; served during the World War; for many years member of the board of education; on the staff of the S. M. Heller Memorial Hospital; aged 67; died, May 17, of carcinoma of the stomach.

George Henry Reichers ✦ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1900; fellow of the American College of Surgeons; served during the World War; surgical director, Bushwick Hospital; consulting surgeon, Lutheran Hospital; aged 62; died, April 30, of coronary thrombosis.

M. Edward Headland, Butler, Pa.; Starling Medical College, Columbus, Ohio, 1889; member of the Medical Society of the State of Pennsylvania; county coroner; for many years physician for the board of health and at one time member of the school board; aged 78; died, May 20, of carcinoma of the intestine.

Hubert Henry Fletcher, McAllen, Texas; Barnes Medical College, St. Louis, 1899 and 1901; member of the State Medical Association of Texas; served during the World War; at one time mayor of Winchester, Ill.; at one time superintendent of the Illinois Soldiers and Sailors Home, Quincy, Ill.; aged 68; died, May 11.

William Freeman Rich, Pueblo, Colo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; member of the Colorado State Medical Society; on the staffs of St. Mary Hospital and the Corwin Hospital; aged 66; died, May 14, in the Woodcroft Hospital of lethargic encephalitis.

Gardner A. Huntoon ✦ Des Moines, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1896; member of the state board of health from 1911 to 1913; on the staff of the Iowa Lutheran Hospital; aged 66; died, May 30, of coronary occlusion.

Hubert J. Phillips, Bear Lake, Pa.; National Normal University College of Medicine, Lebanon, Ohio, 1893; National Medical College, Chicago, 1896; member of the Medical Society of the State of Pennsylvania; aged 75; died, May 15, of arteriosclerosis and diabetes mellitus.

William Kaull Jacoby, Evanston, Wyo.; St. Louis University School of Medicine, 1906; member of the Wyoming State Medical Society; owner of a hospital bearing his name; aged 61; died, May 6, of injuries received in an automobile accident near Jackson.

Lamora Shuey, Toledo, Ohio; Toledo Medical College, 1898; member of the Ohio State Medical Association; for many years on the staff of the Robinwood Hospital; aged 78; died, May 25, of empyema of the gallbladder with gallstones and acute pancreatitis.

Joseph Michael O'Malley, Ohio, Ill.; St. Louis University School of Medicine, 1907; member of the Illinois State Medical Society; president of the board of education; aged 65; died, May 23, when the automobile in which he was driving was struck by a truck.

James Henry Walsh ✦ Fall River, Mass.; College of Physicians and Surgeons, Baltimore, 1910; for many years bacteriologist for the city board of health; on the staff of the Newport Hospital; aged 56; died, May 14, of heart disease and hypertension.

George W. McCarthy, Kenosha, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1901; member of the State Medical Society of Wisconsin; on the staffs of St. Catherine's and Kenosha hospitals; aged 71; died, May 22, of myocarditis.

Joseph L. Leopold, Grand Cane, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1891; member of the Louisiana State Medical Society; aged 76; died, May 21, in a hospital at Shreveport of shock following a prostatectomy.

Alfred Maull Elwell, Camden, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the Medical Society of New Jersey; on the staff of the Cooper Hospital; aged 64; died, May 24, in Ocean City of myocarditis.

George Lucian Bates ✦ Morrisville, Vt.; University of Vermont College of Medicine, Burlington, 1897; served during the World War; aged 69; formerly president of the staff of the Copley Hospital, where he died, May 21, of cerebral hemorrhage.

William Franklin Cross, Miami, Fla.; Atlanta (Ga.) School of Medicine, 1912; veteran of the Spanish-American and World wars; aged 61; died, May 21, in the Jackson Memorial Hospital of peritonitis following an operation for peptic ulcer.

Delbert Arthur Welles ✦ Fitchburg, Mass.; Columbian University Medical Department, Washington, D. C., 1898; member of the city council; aged 76; died, May 1, in the Burbank Hospital of coronary thrombosis and cerebral sclerosis.

Howard Russell Sword ✦ Milledgeville, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; formerly member of the board of health; aged 60; died, May 21, of cerebral hemorrhage.

William Joseph Daly, Brookline, Mass.; Harvard Medical School, Boston, 1895; served in various capacities on the staffs of the Boston City Hospital and the Massachusetts Eye and Ear Infirmary, Boston; aged 67; died, May 17.

Frederick John Hund, Freestone, Calif.; University of the City of New York Medical Department, 1879; aged 82; died, May 20, in St. Francis Hospital, San Francisco, of hypostatic pneumonia and carcinoma of the cecum.

Edwin Augustus Moore, Harlan, Iowa; John A. Creighton Medical College, Omaha, 1901; member of the Iowa State Medical Society; formerly member of the state legislature; aged 68; died, May 25, of chronic myocarditis.

James Edwin Jones, Hollis, Okla.; Kansas City (Mo.) Medical College, 1891; member of the Oklahoma State Medical Association; formerly health superintendent of Harmon County; aged 76; died, May 23, of coronary disease.

Clarence Wesley Tunison, Cincinnati; Medical Department of the University of Cincinnati, 1912; member of the Ohio State Medical Association; aged 53; died, May 23, of injuries received in an automobile accident.

William Tell Oppenhimer Jr., Richmond, Va.; Medical College of Virginia, Richmond, 1917; member of the Medical Society of Virginia; served during the World War; aged 49; died, May 20, in Radford in an accident.

Benjamin J. McGoogan, Morven, N. C.; University of Maryland School of Medicine, Baltimore, 1912; member of the Medical Society of the State of North Carolina; aged 52; died, May 22, of coronary occlusion.

Nathaniel C. Peters, Northampton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; member of the Medical Society of the State of Pennsylvania; aged 80; died, May 12, of senility.

Edward Daniel Osborne, New Bedford, Mass.; Howard University College of Medicine, Washington, D. C., 1907; member of the Massachusetts Medical Society; aged 64; died, May 18, of coronary thrombosis.

Morse Harrod, Fort Wayne, Ind.; Eclectic Medical Institute, Cincinnati, 1891; member of the Indiana State Medical Association; on the staff of St. Joseph's Hospital; aged 75; died, May 15, of erysipelas.

John Joseph Heck, Baltimore; College of Physicians and Surgeons, Baltimore, 1903; member of the Medical and Chirurgical Faculty of Maryland; aged 61; died, May 4, of arteriosclerosis and heart disease.

John Frank Sargent, Oklahoma City; University of Oklahoma School of Medicine, Oklahoma City, 1921; member of the Oklahoma State Medical Association; aged 47; died, May 4, in the Wesley Hospital.

Thomas Eugene Puthoff, San Francisco; Stanford University School of Medicine, San Francisco, 1935; member of the California Medical Association; aged 31; died, May 15, of a self-inflicted bullet wound.

Seth Wade Huffman, McKenzie, Tenn.; University of Tennessee Medical Department, Nashville, 1906; member of the Tennessee State Medical Association; aged 68; died, May 21, of cardiovascular disease.

Robert G. Fallis, Louisville, Ky.; University of Louisville Medical Department, 1883; Hospital College of Medicine, Louisville, 1895; aged 78; died, May 12, in the Deaconess Hospital of mesenteric thrombosis.

Brett Davis, Los Gatos, Calif.; University of Kansas School of Medicine, Kansas City, 1909; member of the California Medical Association; served during the World War; aged 56; died, May 12.

Lynn Lewis Myers, Sheldon, Iowa; State University of Iowa College of Medicine, Iowa City, 1916; on the staff of the Sheldon Good Samaritan Hospital; aged 47; died, April 27, of arteriosclerosis.

Charles Nelson Race, Flint, Mich.; Detroit College of Medicine and Surgery, 1914; for many years coroner of Tuscola County, Mich.; aged 51; died, May 16, in the Hurley Hospital of coronary occlusion.

Louis Adelbert Ling ✠ Deer Park, Wash.; State University of Iowa College of Medicine, Iowa City, 1934; captain in the medical reserve corps of the United States Army; aged 30; died, May 17.

Jesse Brenton Coppens, Chicago; Loyola University School of Medicine, Chicago, 1917; on the staff of the Martha Washington Hospital; aged 58; died, May 20, of chronic myocarditis.

Edwin Irving Ives ✠ Little Falls, N. J.; University and Bellevue Hospital Medical College, New York, 1908; health officer of Little Falls; aged 55; died, May 20, of coronary thrombosis.

Arthur Newlin ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1899; served during the World War; aged 66; died, April 13, of coronary thrombosis.

Theodore Adolphus Saupert, Toledo, Ohio; Toledo Medical College, 1912; aged 74; died, May 14, in the Mercy Hospital of a skull fracture received when he was struck by an automobile.

Helen Delucia Fisk Hoffman, Canandaigua, N. Y.; Eclectic Medical College of the City of New York, 1882; aged 92; died, May 16, in the Canandaigua Health Home of pneumonia.

William Beach Hewett, St. Petersburg, Fla.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1877; aged 89; died, May 14, of coronary occlusion.

John H. Jones, Seymour, Ind.; Eclectic Medical Institute, Cincinnati, 1891; aged 80; died, May 14, in the Schneck Hospital of complications resulting from a fractured hip received in a fall.

John Lawrence Sheils, New York; Columbia University College of Physicians and Surgeons, New York, 1896; aged 68; died, May 23, of uremia and fracture of the left femur due to a fall.

Albert S. Corbin, Tennessee City, Tenn.; American Eclectic Medical College, Cincinnati, 1890; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1891; aged 79; died, May 30.

Stephan Seborn Jones, Calico Rock, Ark. (licensed in Arkansas in 1903); member of the Arkansas Medical Society; aged 69; died, May 7, in a hospital at Batesville of coronary disease.

Eugene Trustrum Hurd, Auburn, Calif. (licensed in Washington in 1916); served with the Russian Army during the World War; aged 59; died, May 19, in Richardson Springs.

Joseph Hannibal Howard, Chicago; Meharry Medical College, Nashville, Tenn., 1904; on the staff of the Provident Hospital; aged 62; died, May 12, of cerebral hemorrhage.

Jesse A. Jamison, Fairmont, W. Va.; College of Physicians and Surgeons, Baltimore, 1884; formerly city health officer; aged 81; died, May 26, of coronary heart disease.

John William Harrah, Minneapolis; Fort Wayne (Ind.) College of Medicine, 1879; aged 89; died, May 23, in the Abbott Hospital of a fractured hip received in a fall.

Charles F. Daubenspeck, Butler, Pa.; Western Reserve University Medical Department, Cleveland, 1877; aged 91; died, May 16, of chronic myocarditis and endocarditis.

James Henry Johnson ✠ Columbus, Ga.; Southern Medical College, Atlanta, 1891; on the staff of the City Hospital; aged 75; died, May 11, of coronary thrombosis.

John Cicero Hughes ✠ Hoxie, Ark.; Memphis (Tenn.) Hospital Medical College, 1903; served during the World War; aged 65; died, May 13, of angina pectoris.

Edward William Mulligan, Tucson, Ariz.; George Washington University School of Medicine, Washington, D. C., 1917; aged 48; hanged himself, May 12.

M. Alice Kirk Roehrig Ryan Heney, Hastings, Mich.; University of Wooster Medical Department, Cleveland, 1892; aged 74; died, June 7, in Richland.

Edward Wilson Sickel ✠ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1923; aged 42; died, May 19 of chronic nephritis.

Alfred Camille DuPont, New York; University of the City of New York Medical Department, 1895; aged 73; died, May 30, of pneumonia.

Eber Eldon Haggerty, La Farge, Wis.; Milwaukee Medical College, 1898; served during the World War; aged 69; died, May 12.

Alice Florence Piper Rud, Chicago; Woman's Medical College, Chicago, 1889; aged 76; died, May 23, of myocarditis and nephritis.

John Hutchinson, New York; New York Homeopathic Medical College and Hospital, New York, 1898; aged 81; died, May 29.

Ernest W. Oelfcken, St. Louis; Missouri Medical College, St. Louis, 1896; aged 70; died, May 12, in the Central Hospital.

Correspondence

CANADIAN COMMISSION DENIES AUTHORIZATION FOR CIRCULAR ON KOCH TREATMENT FOR CANCER

To the Editor:—Apparently a circular letter has been widely distributed among members of the medical profession in the United States, indicating that this commission has compiled a series of proofs of the efficacy of the Koch treatment of cancer.

A sponsor of the Koch treatment appeared before this commission and submitted some evidence, in the main consisting of case histories. To correct any erroneous inference that might be drawn from the circular mentioned, it should be noted that this commission has made no report expressing any opinion whatever of the efficacy or otherwise of the treatment as a remedy or cure for cancer.

J. G. GILLANDERS, Toronto.
Chairman, Commission in the Investigation of Cancer Remedies.

ABORTION

To the Editor:—An article in the June 21 issue of THE JOURNAL (Bush, W. L.: Tetanus Following Induced Abortion) high lights one of the great evils which should be attacked vigorously and specifically by the American Medical Association. I refer to the prevalence of abortionists and the *laissez-faire* attitude of the ethical members of our profession toward them. Five (or possibly seven) maternal deaths due to illegal abortions performed by one man in two weeks is indeed fortunately rare, but many times that number of fetal deaths and of potential maternal deaths are routine with numerous men whose existence in the community and even in the medical profession is tacitly condoned by the more respectable members of the latter. In the aggregate, the seriousness of this condition becomes apparent when one notes that 25 per cent of all maternal deaths occur in the first trimester of pregnancy and that most of them are due to sepsis.

When I was carrying on my study of abortion cases at Belleview Hospital, New York (*Am. J. Obst. & Gynec.* **39:** 919 [June] 1940; **41:**61 [Jan.], 285 [Feb.] 1941; *Human Fertil.* **6:**37 [April] 1941), I received the impression, exaggerated of course, that I was the only physician and almost the only adult woman in the city who did not know the name and address of at least one so-called good abortionist. I could have learned of half a dozen simply by asking, had I not expressly wished to remain in ignorance.

While recoiling in horror from the idea of performing an illegal abortion themselves, few of my colleagues would refuse to supply the name and address of one of these abortionists to a patient who applied to them in distress. The excuse they gave was that the woman was determined to be rid of the fetus and, if not directed to a clean and skilful abortionist, would either injure herself by attempts at self induction or fall into the hands of a dirty bungler. This reasoning, while often true in the individual case, has been given more weight than it deserves and has led collectively to a flourishing and ever increasing illicit traffic. The public has come to look on abortion as an easy way out of a common dilemma. Many women believe it is a safe minor operation if performed by a physician. Some seem to have no more feeling about it than about having a tooth pulled. A number told me that they would rather take a chance and have an abortion, "if necessary," than bother with birth control. All this, of course, is indicative of a wrong headed attitude on the part of the public, but it has been fostered, howbeit unintentionally, by the easy going refusal to face the issues squarely which is the sin of omission of the most reputable of our profession.

While it is true that many women are "hell bent" on abortion and will take the most desperate chances in their efforts to procure it, the majority would be stayed by the mere inaccessibility of an abortionist. Every physician has known cases of women who frantically reject the idea of pregnancy at the time of the first missed period but who, having carried until the fourth or fifth month, reverse their attitude and settle down placidly to become good and happy mothers. This is true not only of married women who have rather superficial reasons for avoidance of additions to the family but also of others whose social or economic status might seem to make the birth of a child catastrophic.

This question should be brought out in the open. The lay and professional public should be educated as in the case of the recently unmentionable venereal diseases. The indications for therapeutic abortion should be clarified and it should be available (after due consultation and in a reputable hospital) to all women who present the bona fide indications agreed on. At the same time, those who perform illicit operations should be whole heartedly purged from our ranks and punished to the extent of the law. If these measures were carried out I believe the same brilliant results could be expected as are now being seen in the campaign against syphilis.

The prosecution of illicit practitioners cannot succeed without the vigorous support of the public. We hear frequently the fatalistic remark "You can't get a jury to convict them." On the other hand, education of the public can succeed in decreasing resort to abortionists but slowly as long as the services of these dangerous renegades are readily available to any woman who thinks she needs them. The difficulty of breaking this vicious circle is no excuse for the apathy with which it is regarded by those who deplore it. A beginning should be made by at least airing the problem.

VIRGINIA CLAY HAMILTON, M.D., Bath, Maine.

PATERNITY TESTS BY BLOOD GROUPING

To the Editor:—In the Report of the Committee on Medicolegal Blood Grouping Tests, recommendation was made that the use of blood grouping tests for the exclusion of paternity be accepted by the courts throughout this country. It was pointed out, however, that it is essential that the person performing the tests should be properly qualified, as the tests are of a highly specialized nature.

Unfortunately this warning has not been followed, and a number of blunders have resulted in addition to those mentioned in the report of the committee. Aside from the mistakes made by totally unqualified persons who presumed to undertake the examinations, errors have been made by four physicians who are outstanding in their own chosen fields. It seems trite to remark that a person who is experienced in one field does not qualify to perform work in a field in which he has no experience. In New York City the Court of Special Sessions requested the Academy of Medicine to provide a list of physicians qualified to perform blood grouping tests in paternity cases. The procedure followed by the medical society was to send circular letters to all pathologists inquiring whether or not

they felt that they could perform the tests, and all those who replied in the affirmative were included in the list. How fallacious this procedure was has been proved by the blunders made by the four physicians mentioned. It has been suggested that, to prepare a list of real experts in blood grouping, the following qualifications be required of them: (1) That the expert has published an outstanding contribution to the subject or studied with a recognized authority in the field; (2) that he submit to a practical examination in which he is required to type a series of blood samples for A-B, M-N and the subgroups, and that he test these bloods without making a single error, and (3) that the expert prepare his own reagents, including the anti-M and anti-N testing fluids. The last qualification is particularly important, because only those actively engaged in the field will prepare their own reagents, and it is the ones only casually interested in the subject and who make only occasional tests who make the errors. It is a necessary part of the test to check the reagents against standard blood samples to insure that they are of suitable potency. If the serums are not sufficiently potent or are improperly labeled, this will be revealed by the control test, and such serums must be discarded. It may be remarked that doctors posing as experts in blood grouping must assume full responsibility for their reports, and the fact that they obtained their serums from a commercial house and the serum proved to be weak does not absolve them of any of the blame should a mistake result.

ALEXANDER S. WIENER, M.D., Brooklyn.

THE ELECTRON MICROSCOPE IN SPERMATOZOAL VISUALIZATION

To the Editor:—Seymour and Benmosche reported in THE JOURNAL (May 31, p. 2489) the use of the electron microscope in studying and photographing the spermatozoon. While I do not wish to detract from this contribution in photographing a spermatozoon at a magnification of 27,000 diameters, some comment is evoked by the conclusions which these authors have drawn.

Seymour and Benmosche photographed one or two sperms from a single specimen and on this basis describe the shape of the heads of spermatozoa to be "pear shaped." Although it is accepted by spermatologists that pear-shaped (pyriform) sperm heads are present among the normal sperms to the extent of only 4 to 9 per cent, it seems that Seymour and Benmosche were unaware of this and instead have utilized a pear-shaped head and set it up as a normal standard.

These authors also claim to have found, among other things, a "crater-like notch" on the "vertex" of the sperm head, which they suggest to be a "suction apparatus" and which they intimate may be the means of spermatozoal attachment to the ovum.

Seymour and Benmosche further claim that ordinary microscopic visualization of sperm cells yields little information. With proper staining technic and with the oil immersion lens of the ordinary microscope I have been able to visualize much more of the structure of the sperm than I was able to discern from the reproduction of the electron photographs which they published.

It would be desirable for other workers to make additional studies with the electron microscope under varying conditions, using more than one semen specimen from different individuals, before any changes in the concept of the spermatozoon and before any new biologic function of the sperm head should be accepted.

ABNER I. WEISMAN, M.D.
Department of Obstetrics and Gynecology of
the Metropolitan Hospital, New York.

THE USE OF SURFACE ANESTHESIA IN THE TREATMENT OF PAINFUL MOTION

To the Editor:—Kraus's article "The Use of Surface Anesthesia in the Treatment of Painful Motion" (THE JOURNAL, June 7, p. 2582) presents another aspect in the treatment of pain in the soft tissues.

It is unfortunate that he has not read widely on the use of injections of procaine hydrochloride; American and English workers have gone far beyond Leriche's original work. A patient with a sprained ankle can be quickly relieved by having 10 to 20 cc. of a 1 per cent solution of procaine hydrochloride injected into the torn ligaments and returned to work or sport.

The injection treatment does have the disadvantage of a needle prick; it has all the advantages of specificity. It directly relieves the painful point which causes the pain (see Sir Thomas Lewis and Kellgren's work on skin, fascia and muscle pain). Anesthetization of the skin alone is not adequate as I have tried to use it either with local applications or with infiltration of the skin with procaine hydrochloride. The latter procedure does partially relieve the sharp pain but has no effect on the dull aching of muscle pain.

In a series which is now reaching 500 injections of procaine, nupercain-ciba and eucupine, I have not had one case of infection.

As procaine hydrochloride and the barbiturates are antagonists, the use of a moderate size dose of pentobarbital sodium prevents any rare procaine after-effect. As far as procaine sensitivity goes, study at the Mayo Clinic shows that only 1 person in 20,000 is truly allergic, and such persons can be identified by the red wheal which appears on injection of procaine hydrochloride. A few months ago I repaired a perforated ulcer under local anesthesia, using 125 cc. of 0.5 per cent solution of procaine hydrochloride on a patient who "could not take novocain."

Many workers in the field of pain (Hartung, Steinbrocker, Steel, Charterhouse Rheumatism Clinic) can tell of thousands of injections with definitely beneficial results.

R. L. GORRELL, M.D., Clarion, Iowa.

To the Editor:—In THE JOURNAL, June 7, page 2582, Hans Kraus in his paper on "The Use of Surface Anesthesia in the Treatment of Painful Motion" states: "Empirically . . . cutaneous anesthesia . . . relieves the deep-seated pain in muscular spasm. I have no explanation to offer as to how this deep effect of surface anesthesia works. It seems to be a fact, but the underlying physiologic explanation represents an interesting field for exploration."

As to the explanation of the effect of surface anesthesia on pain, I would call attention to my article "Dependence of Sensation of Pain on Cutaneous Impulses" (*Arch. Neurol. & Psychiat.* **40**:743 [Oct.] 1938) in which I concluded: "Anesthetization of localized areas of hyperalgesia and hyperesthesia in the skin relieves pain arising from deeper structures, whether visceral or skeletal. . . . Pain from skeletal or visceral tissues is referred to the skin and may be explained by a modification of Mackenzie's theory of visceral pain: An irritable focus in the central nervous system develops when it is bombarded with stimuli from an inflamed visceral or skeletal structure, which lowers the threshold for afferent impulses from the ectoderm entering the system at the level of that focus."

The observations of Hans Kraus on skeletal pains are in accord with my theory regarding the mechanism of the sensation of pain.

EDWARD HOLLANDER, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS

EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, July 12, page 137.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, Nov. 6-7. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct. 1. *Written.* Sacramento, Oct. 20-23. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: * *Endorsement.* Hartford, July 22. Sec., Dr. Creighton Barker, 258 Church St., New Haven.

GEORGIA: Atlanta, Oct. 14-15. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 7. Dir., Bureau of Occupational License, Mr. Walter Curtis, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 14-16. Supt. of Registration, Mr. Lucien A. File, Department of Registration and Education, Springfield.

KANSAS: Topeka, Sept. 23-24. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

MARYLAND: *Medical.* Baltimore, Dec. 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore.

MICHIGAN: * Lansing, Oct. 15-17. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Oct. 21-23. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 6-8. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: *Reciprocity with oral examination,* Aug. 4. Sec., Dr. Fred M. Anderson, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, Oct. 21-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 13-14. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

WASHINGTON:* Seattle, July 21-23. Sec., Department of Licenses, Mr. Nelson N. Vaughan, Olympia.

WISCONSIN: * Madison, Jan. 13-15. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 6-7. Sec., Dr. M. C. Keith, State Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, Sept. 10-11. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 20-21. Sec., Dr. George C. Ruhland, 203 Dishart Bldg., Washington.

MINNESOTA: Minneapolis, Oct. 7-8. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA:* Lincoln, Oct. 7-8. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Nov. 1. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Aug. 20. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 5-6. Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, Sept. 20. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Missouri Reciprocity Report

The State Board of Health of Missouri reports 13 physicians licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners, on April 24. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1933)	Arkansas
University of Colorado School of Medicine		(1939)	Tennessee
Emory University School of Medicine		(1933)	Minnesota
Rush Medical College		(1937)	California
University of Illinois College of Medicine		(1914)	Illinois
State University of Iowa College of Medicine		(1938)	Iowa
Tufts College Medical School		(1937)	Maine
University of Michigan Medical School		(1937)	Michigan
Wayne University College of Medicine		(1940)	Michigan
Ensworth Medical College		(1908)	Kansas
Marion-Sims-Beaumont Medical College		(1902)	Oklahoma
Columbia University College of Physicans and Surgeons		(1923)	New York
University of Cincinnati College of Medicine		(1929)	Ohio

School	LICENSED BY ENDORSEMENT	Year Grad.
Yale University School of Medicine		(1936)
St. Louis University School of Medicine		(1939)

Washington January Report

The Washington State Board of Medical Examiners reports the written examination for medical licensure held at Seattle, Jan. 13-15, 1941. The examination covered 7 subjects and included 70 questions. An average of 60 per cent in each subject was required to pass. Thirty candidates were examined, 29 of whom passed and 1 failed. Nine physicians were licensed to practice medicine by reciprocity and 3 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1940)*	81.3, 83.5, 85.8
George Washington University School of Medicine		(1939)	82
Loyola University School of Medicine		(1935) 79.4, (1940)*	82, 82
Northwestern University Medical School		(1936) 81.4, (1940)	87
Rush Medical College		(1937) 79, (1940)	84.5†
Harvard Medical School		(1935)	87.1
University of Minnesota Medical School		(1939) (1940) 78.7‡	86.1,
St. Louis University School of Medicine		(1939)	80.7
Creighton University School of Medicine		(1940)	72.1†
University of Oregon Medical School		(1939) 83.7,† 84.1,† 84.4,	85.8
University of Pennsylvania School of Medicine		(1938)	79.7
Boylor University College of Medicine		(1940)	79†
University of Wisconsin Medical School		(1940)	86.2†
University of Alberta Faculty of Medicine		(1940)	82.4
McGill University Faculty of Medicine		(1939)	79.4†
Medizinische Fakultät der Universität Wien		(1936) (1937) 77.5	85.7,
Universität Heidelberg Medizinische Fakultät		(1939)	78.1
Universität Rostock Medizinische Fakultät		(1936)	76.5

School	FAILED	Year Grad.
College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois		(1910)

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1940)	California
Stanford University School of Medicine		(1939)	California
University of Colorado School of Medicine		(1938)	Colorado
The School of Medicine of the Division of the Biological Sciences		(1937)	Wisconsin
University of Louisville School of Medicine		(1939)	Kentucky
Johns Hopkins University School of Medicine		(1936)	Maryland
St. Louis University School of Medicine		(1934)	Missouri
University of Oregon Medical School		(1939)	California
University of Wisconsin Medical School		(1938)	California

School	LICENSED BY ENDORSEMENT	Year Grad.
Rush Medical College		(1938)
University and Bellevue Hospital Medical College		(1933)
McGill University Faculty of Medicine		(1936)

* These applicants have completed four years' medical work and will receive the M.D. degree on completion of internship. Licenses have not been issued.

† Licenses have not been issued.

‡ This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship. License has not been issued.

Nevada May Report

The Nevada State Board of Medical Examiners reports the written examination for medical licensure held at Carson City, May 5, 1941. The examination covered 13 subjects and included 75 questions. An average of 75 per cent was required to pass. Four candidates were examined, 2 of whom passed and 2 failed. Four physicians were licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Illinois College of Medicine		(1940)	86.7*
University of Wisconsin Medical School		(1939)	86.8

School	FAILED	Year Grad.
University of Arkansas School of Medicine		(1907)
University of Texas School of Medicine		(1919)

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1940)	California
Northwestern University Medical School		(1931)	Illinois
Tulane University of Louisiana School of Medicine		(1927)	Louisiana
University of Pennsylvania School of Medicine		(1912)	Penna.

School	LICENSED BY ENDORSEMENT	Year Grad.
University of Maryland School of Medicine and College of Physicians and Surgeons		(1927)

* This applicant has completed four years' medical work and will receive the M.D. degree on completion of internship. License has not been issued.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Dental Practice Acts: Referring of Patients to Unlicensed Persons as "Fraud or Misrepresentation in Practice."—The Arizona State Dental Board instituted proceedings to revoke Batty's license to practice dentistry on charges that (1) he was physically incompetent to practice because he was suffering from pulmonary tuberculosis; (2) he was guilty of misrepresentation in securing his license in that he represented himself at that time to be free from any malignant, infectious or contagious disease whereas he was in fact suffering from pulmonary tuberculosis, and (3) he had been guilty of fraud in the practice of dentistry in that he had (*a*) practiced under a name not included in his license and (*b*) referred certain patients to a dental laboratory wherein dentistry was practiced by unlicensed persons. After notice and hearing, the board found that all charges had been sustained and, in effect, revoked his license. The dentist brought certiorari to the superior court, Maricopa County, which affirmed the order of the board, and he appealed to the Supreme Court of Arizona.

The Supreme Court first determined that the conferring of quasijudicial powers on an administrative body, such as the state dental board, did not violate that provision of the state constitution vesting the judicial power of the state in designated courts and that the state legislature had the right to confer on the state dental board the power to hear and determine whether acts which the legislature said would justify a revocation of a license had been committed by a particular licentiate. Having so concluded, the court held that courts could by certiorari review the action of an administrative body to determine whether it had acted within its jurisdiction even though in such a review the courts could not weigh the evidence before the inferior body.

The dental practice act, said the Supreme Court, authorizes the board of dental examiners to revoke a license, among other things, for (*a*) physical or mental incompetency, (*b*) fraud or misrepresentation in securing a license and (*c*) fraud or misrepresentation in the practice of dentistry, all of which acts the dentist in this case was charged with committing. Proof of one charge at least was necessary to give the board jurisdiction to revoke his license.

The court concluded that the first charge against the dentist (that he was physically incompetent to practice dentistry because he was suffering from pulmonary tuberculosis) was not sustained by the evidence before the board. Unquestionably, said the court, while one afflicted with active pulmonary tuberculosis is not physically qualified to practice dentistry because of the grave danger of infection to his patients, the record does not indicate that the accused dentist was so afflicted at the time the charges were preferred. All the record indicated was that at one time the dentist had drawn compensation for tuberculosis, but the case had become arrested. A person with an arrested case of tuberculosis is of no more danger to a patient, so far as infection is concerned, than one who has never had the disease.

The court next determined that the second charge against the dentist (that he had been guilty of fraud or misrepresentation in securing his license to practice because at that time he was afflicted with tuberculosis) was also not sustained by the evidence before the board. The only evidence on this point, said the court, is that the dentist was examined by two reputable physicians just before securing his license and certified as free from active tuberculosis.

The court was not impressed with the portion of the charge that the dentist was guilty of fraud and misrepresentation in the practice of his profession because he practiced under names not included in his license. It appeared that he gave his name to the board when he was admitted to practice as Batty and practiced subsequently under the name Battie. These names, said the court, are idem sonans, and the evidence shows affirmatively that the dentist had used both spellings at various times in his life without any intent to perpetrate a fraud on any one. The mere use of the two names is not evidence of fraud in his practice.

With respect to the remaining charge of fraud against the dentist, said the court, namely that he had referred certain patients to a dental laboratory wherein dentistry was practiced by unlicensed persons, the following evidence was adduced before the board: One N testified that, desiring to have a dental plate made and four teeth extracted, he went to the office of the dentist with one S, there being present in the office the dentist, S and one V, who was a partner with one P in an independent dental laboratory, neither of whom were licensed to practice dentistry in Arizona. A discussion was held among them as to whether the teeth should be extracted first and the impression made or whether the impression should be made first and the teeth extracted later, and it was decided to make the impression first. The testimony is not clear as to whether the dentist or V directed N as to what he should do, but both were present when the patient was told by one of them to go to the dental laboratory and have the impression made, and nothing was said by either about the fact that V and P were not licensed dentists, a fact which was known to the dentist. This N did some four days later and the impression was made by P, the dentist not being present. The Arizona dental practice act, continued the court, expressly prohibits such persons as P and V from making casts or impressions, unless the work is directly supervised by a licensed dentist. Three days later N returned to the dentist's office and the latter extracted four teeth. N then went to the laboratory to have the plate put in, and while he was there the dentist came in to collect the fee for the extractions. V made out a statement to N, showing the preparation of the plate and the extractions in separate items, whereon N paid V and the latter gave plaintiff the $4 which he demanded for the extractions.

Does this testimony, said the court, if believed by the dental board, justify a conclusion that the dentist has committed fraud in his practice? The answer depends on the duty of the dentist under the circumstances. Dentists are included in the meaning of the term "physician and surgeon" as the term is used in defining the duties a physician or surgeon owes to his patients. When the relationship of physician and patient exists, it is one of trust and confidence, and the physician must in all dealings with his patient use the utmost good faith, or he is guilty of fraud. Does the conduct of the dentist, as testified to by N, constitute fraud or misrepresentation? The relationship of physician and patient did exist between N and the dentist. The dentist either advised N or heard the advice given N in his presence, without his making any comment thereon, that he should have dental services performed by P, when he knew that P was prohibited by law from performing this particular class of service, and P did therefore, to the knowledge of the dentist, perform such dental services for N. Was it the duty of the dentist to advise his patient that P was prohibited by law from doing the work which the patient desired to have done? The purpose and the only justification of the various statutes regulating the practice of medicine in its different branches is to protect the public against those who are not properly qualified to engage in the healing art, and one who is not licensed under such statutes is conclusively presumed to be unqualified. When a patient employs a physician he has the right to assume that the latter will advise him properly in all matters pertaining to his ailments, and this certainly includes advice as to who are properly qualified to assist in his treatment. Fraud may be committed by a failure to speak, when the duty of speaking is imposed, as much as by speaking falsely. We think a physician who knows that a patient of his is about to have surgical or medical work done by one who has no legal right to do it fails in his duty if he does not advise the patient of the situation.

The court accordingly concluded that the board had acted within its jurisdiction and, in effect, affirmed the order of the board revoking the dentist's license to practice.—*Batty v. Arizona State Dental Board, 112 P. (2d) 870 (Ariz., 1941).*

Malpractice: When Erroneous Diagnosis Actionable.—In a suit for malpractice against the physician defendant the plaintiff alleged that the physician undertook to treat her for a "malady, the true and exact nature of which was unknown" to her; that he failed to exercise the ordinary and reasonable skill generally exercised by members of his profession in good standing and negligently, carelessly and erroneously diagnosed her condition as tuberculosis of the lungs and advised her to confine herself to bed; that she followed his advice and remained in bed for thirteen months, and that by reason of his negligence and carelessness "her general health became permanently impaired and undermined." The trial court sustained a demurrer interposed by the physician and the patient appealed to the Supreme Court of Florida.

The defendant, said the Supreme Court, was employed not only to treat the plaintiff but first of all to determine the identity of the malady from which she suffered. If the treatment he administered was the proper treatment for the malady, the plaintiff has no cause of action. Likewise, she has no cause of action if the treatment did her no injury and her discomfort is the result of the malady from which she suffered. The court then adverted to *Osborn* v. *Carey*, 24 Idaho 158, 132 P. 967, in which case it was alleged that the plaintiff suffered with a disease of the leg, "which disease and ailment was well known and accompanied by peculiar signs and symptoms which an ordinary physician would detect," and that the physician negligently and unskilfully treated the patient for "blood poisoning." The Supreme Court of Idaho in that case held on appeal that the trial court should have sustained a demurrer since the declaration was vague, indefinite and uncertain because it did not allege the nature of the alleged disease from which the patient was suffering or what were the signs and symptoms of such disease which, it was alleged, were "well known and peculiar."

In the present case, said the Supreme Court of Florida, the declaration does not allege the name of the disease or malady from which the patient suffered. There is no allegation as to the signs and symptoms apparent nor that the malady was one that should have been recognized by a physician. The court then quoted from the Idaho decision, as follows:

> If we assume that the exact charge of negligence as to the treatment related only to the mistake of the disease, and that the appellant had wrongfully diagnosed it as "blood poisoning," and treated the ailment on the wrong theory as to the nature of the disease, the defendant would not necessarily be liable, even though the treatment did not produce good results, for it must appear from the allegations of the complaint that the treatment was not proper from the standpoint of the consensus of opinion among physicians and surgeons of ordinary skill and learning in the profession in the locality wherein defendant practiced.

In the present case, continued the Supreme Court, for all the declaration gives us to know, the proper treatment of the malady from which the patient suffered was that which was recommended and applied by the physician. If this should be true, the defendant would not be liable for using such treatment even though it did not produce good results, for negligence cannot be presumed from the fact that a physician fails to effect a cure.

The court then quoted from *Merriam* v. *Hamilton*, 64 Or. 476, 130 P. 406, as follows:

> A complaint, in an action by a married woman for malpractice, which alleges that she employed defendant as her physician to treat her for a backache, that he mistakenly diagnosed her case as one of pregnancy, that he negligently failed to examine her to ascertain that she was not in such condition, and failed to ascertain her true condition, and that by reason thereof she was rendered sick and injured in her health and rendered weak and nervous, states no cause of action for failing to show that her real condition was one of disease which by the exercise of ordinary skill defendant should have discovered; "disease" being defined as an alteration in the state of the body, or of some of its organs interrupting or disturbing the performance of the vital functions, or a particular instance or case of this, and the word "pain" being defined as a disagreeable feeling usually in its intenser degrees resulting from, or accompanying, deranged or otherwise abnormal action of the physical powers.
>
> While it is sufficient to charge in general terms that an injury was negligently inflicted, the acts done must be stated, and it must appear from the facts averred, and not from mere conclusion, that the negligence caused or contributed to the injury.

The declaration in this case, said the Supreme Court, avers in effect that the patient was ill when she consulted the defendent. While it appears that she is still ill there is no allegation as to whether her condition is better or worse than when she first consulted the physician. A physician or surgeon does not insure the correctness of his diagnosis. His legal responsibility is to use ordinary skill and diligence and to apply the means and methods ordinarily and generally used by physicians of ordinary skill and learning in the practice of his profession to determine the nature of the ailment and to act on his honest opinion and conclusion. It follows that no cause of action on the grounds of an erroneous diagnosis is stated unless the plaintiff alleges the nature or identity of the malady from which she suffered; that such malady should have been recognized and diagnosed as such by a physician of ordinary skill and learning in the practice of his profession; that it was not so recognized and treated as such malady would have been treated by a physician of ordinary skill and learning, and that the treatment administered by the physician was not a proper treatment for the existing malady but resulted in damage to the plaintiff.

For the reasons stated the judgment of the trial court in sustaining the demurrer was affirmed and the cause remanded with permission to the patient to apply to the trial court for leave to file an amended declaration.—*Hill v. Boughton, 1 So. (2d) 610 (Fla., 1941).*

Medical Practice Acts: Probation as Bar to Revocation of License for Conviction of a Felony.—The jury in a United States district court found the physician involved in the present case guilty of executing a false and fraudulent document. The trial judge, however, suspended sentence on the verdict and placed the physician on probation for a period of five years. Subsequently the State Board of Medical Examiners of Florida served notice on the physician that it would proceed to hear charges filed against him for a revocation of his license to practice medicine on the ground that he had been convicted of a felony. The physician then filed a petition for a writ of prohibition in the Supreme Court of Florida to restrain the defendant from hearing the charges.

The question before the Supreme Court was whether or not the physician had been convicted of a felony within the meaning of the medical practice act in view of the fact that no sentence had ever been entered on the verdict of the jury. The Board of Medical Examiners was given authority, the court said, to revoke or cancel the license of a practitioner of medicine who had been convicted of a felony so as to prevent practitioners who had departed from the high standards required of them from continuing in practice. The court viewed the medical practice act as an instrumentality for the removal of black sheep from the honorable profession of medicine, thereby promoting the health, happiness, comfort and welfare of the people. Since sentence was never imposed on the physician, however, the court on the basis of prior decisions held that he had not been convicted within the contemplation of the medical practice act.—*Page v. State Board of Medical Examiners of Florida et al., 193 So. 82 (Fla., 1940).*

Society Proceedings

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 11-13. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Association of Railway Surgeons, Chicago, Sept. 8-10. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.

American Congress of Physical Therapy, Washington, D. C., Sept. 1-5. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.

National Medical Association, Chicago, Aug. 18-22. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.

Oregon State Medical Society, Portland, Sept. 3-6. Dr. M. L. Bridgeman, 1020 S. W. Taylor St., Portland, Secretary.

Rocky Mountain Medical Conference, Yellowstone Park, Wyo., Sept. 2-4. Mr. W. H. Tibbals, 610 McIntyre Bldg., Salt Lake City, Secretary.

Washington State Medical Association, Seattle, Aug. 24-26. Dr. Vernon W. Spickard, 1305 Fourth Ave., Seattle, Secretary.

Wisconsin, State Medical Society of, Madison, Sept. 10-12. Mr. G. B. Larson, 110 East Main St., Madison, Assistant Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Huntington, Ind.

8:101-148 (April) 1941

Fate of Ingested Pectin. S. C. Werch and A. C. Ivy, Chicago.—p. 101.
Contributions Made in 1940 to Knowledge in Regard to Pancreas. R. Elman and L. A. Sachar, St. Louis.—p. 105.
Peptic Ulcer of the Aged. F. W. Mulsow, Cedar Rapids, Iowa.—p. 112.
Gastric Anacidity: Its Physiologic and Clinical Significance and Its Management. H. Shay, J. Gershon-Cohen and S. S. Fels, Philadelphia.—p. 115.
Effect of Feeding Apple Sauce on Induced Diarrhea in Rats. Z. I. Kertesz, Geneva, N. Y.; Martha S. Walker and C. M. McCay, Ithaca, N. Y.—p. 124.
Quantity of Colonic Flatus Excreted by the "Normal" Individual. J. M. Beazell and A. C. Ivy, Chicago.—p. 128.
Colloid Laxatives Available for Clinical Use. H. Gray and M. L. Tainter, San Francisco.—p. 130.
Congenital Absence of Gallbladder. P. J. Sarma, Chicago.—p. 139.

American Journal of Diseases of Children, Chicago

61:669-914 (April) 1941

*Aphthous Pharyngitis. B. B. Breese Jr., Rochester, N. Y.—p. 669.
Measure of Metabolic Speed in Children. M. Tobias and L. Stockford, Los Angeles.—p. 675.
Paroxysmal Tachycardia and Its Treatment in Young Infants. J. P. Hubbard, Boston.—p. 687.
Simple Method for Isolation and Identification of Meningococci and Gonococci. P. L. Boisvert and Mildred D. Fousek, New Haven, Conn.—p. 710.
Big Babies and Their After-History. H. Gray, San Francisco, and H. L. Eder, Santa Barbara, Calif.—p. 717.
Supervision of Children in Contact with Tuberculosis. A. B. Robins, New York.—p. 721.
Differential Leukocyte Count Associated with Hookworm Infection. H. W. Brown, Chapel Hill, N. C., and G. F. Otto, Baltimore.—p. 727.
Regulation of Body Temperature During Sleep. R. Day, New York.—p. 734.
Primogeniture as Etiologic Factor in Pyloric Stenosis. Norma Ford, Mary A. Ross and A. Brown, Toronto, Canada.—p. 747.
Jaundice in Infants and in Children: Icteric Index as Method of Determining Type of Jaundice. Miriam Reiner and S. B. Weiner, New York.—p. 752.
Hand-Schüller-Christian Disease: Case in Which Lymphadenopathy Was Predominant Feature. Margit Freund, New York, and M. L. Ripps, Elizabeth, N. J.—p. 759.
*Myasthenia Gravis: Report of Case in Which Prostigmine Methylsulfate Was Used. S. T. Levethan, A. J. Fried and M. J. Madonick, New York.—p. 770.
*Osteochondrodystrophia Deformans (Morquio's Disease): Report of Three Cases. N. H. Einhorn, J. R. Moore, H. W. Ostrum and L. G. Rowntree, Philadelphia.—p. 776.
Glycogen Disease. H. H. Mason and Dorothy H. Andersen, New York.—p. 795.

Aphthous Pharyngitis.—In the summer of 1938 Breese observed a disease in children which he had not seen previously and which has not been described. It was characterized by a sudden onset with high fever, occasional vomiting, acute inflammation of the throat without much local soreness, abatement of fever in twenty-four hours and the appearance, frequently coincident with the drop in temperature, of a few discrete aphthous or canker-sore-like lesions on the upper portion of the tonsillar pillars. In May 1939 Levine, Hoerr and Allanson described an epidemic of "vesicular pharyngitis and stomatitis" which had occurred in three summer camps in New Hampshire during July and August of 1938. The illness closely resembled that seen by the author. During the summer of 1939 he saw no similar cases, but during June, July and August of 1940 there was a second minor epidemic of the disease in Rochester. He saw 8 cases in 1938 and 20 in 1939. Other pediatricians saw similar cases in the city at the same time. The usual comment of the mothers was that the children were feverish but did not seem sick except for listlessness and anorexia. The mothers were puzzled by the sudden onset of the disease, usually noticed in the late afternoon or early evening. Most of the younger children had a temperature of between 103 and 104 F. There was a surprising lack of symptoms. Vomiting occurred occasionally. In a number of children seen early, numerous petechiae dotted the soft palate and anterior tonsillar pillars; the aphthous lesions appeared later. The ulcerations or aphthous lesions were more definite after the fever had subsided. The temperature was usually normal within twenty-four hours of onset, and the child appeared normal although the aphthous lesions were still present. The absence of pain and discomfort in the throat contrasted strongly with the misery associated with aphthous or herpetic stomatitis. Levine and his associates stated that 50 per cent of the campers less than and 25 per cent more than 18 years of age who were exposed contracted the disease. Sixteen siblings in the author's series were exposed to the disease; 6 contracted the illness, 5 escaped it and for 5 the result of the contact was not known. The parents of the affected children did not contract the illness. For the camp series the incubation period could not be determined, although 2 patients became ill five and seven days respectively after arriving in the camp. There were 10 instances in which the time relation to a previous case could be determined with reasonable accuracy (the nearest twenty-four hours): one day in 1, two days in 2 and three days in 7. In the first of these it is possible that the first child and his probable contact had had a common exposure several days previously. Despite blood counts, direct smears, cultures and attempts to demonstrate a virus, the cause of the disease remains unknown.

Myasthenia Gravis.—Levethan and his co-workers report myasthenia gravis in a girl of 9 whose condition responded to treatment with prostigmine methylsulfate. The salient features of the 34 cases in children less than 17 years of age reported in the literature are presented. In most of these cases, as in their own, the onset of the disease was insidious. Prodromal symptoms of headache, pain and paresthesias in various parts of the body are mentioned. The initial complaints in 73 per cent were fatigability, general muscular weakness and weakness of the ocular muscles. Disturbances of speech and deglutition were late symptoms. The creatine-creatinine metabolism of 11 patients, as summarized by Milhorat and Wolff, indicated in most cases only moderate creatinuria and moderate impairment of creatine tolerance. In 2 rapidly fatal cases, however, the patients excreted large amounts of creatine. The authors agree with Adams, Power and Boothby that the chemical changes in myasthenia gravis are not uniform. Viets and Schwab analyzed their experience with prostigmine in 44 patients and express the opinion that prostigmine bromide, orally, supplemented with ephedrine sulfate, potassium chloride and, occasionally, guanidine is the most efficient available treatment. The duration of the disease in the authors' patient was eighteen months, and the average duration in the 34 reported cases was forty-five and seven-tenths months. In 13 children less than 12 years of age, the average duration was fifteen months. The authors believe that the prostigmine methylsulfate prolonged their patient's life.

Osteochondrodystrophia Deformans.—Einhorn and his colleagues cite 3 instances of Morquio's disease admitted to the pediatric division of the Philadelphia General Hospital and referred for detailed study to the Philadelphia Institute for Medical Research. Two patients were first cousins. Morquio's disease presents a group of deformities, such as pes planus, genu valgum, coxa vara, scoliosis, kyphosis, pectus carinatum, mild clubhand, humerus varus and skeletal dwarfism. They are due to structural defects and to postural changes. Osteochondrodystrophia deformans adequately describes the structural defects. Careful study of 2 patients makes it obvious that there are two distinct phases of this disease: (1) that in which structural defects accompanied by postural changes occur and (2) that in which neurologic features become manifest. With the appearance of the second phase the child becomes completely bedridden and eventually helpless. The bone changes do not

alone account entirely for this new picture. Much to the authors' surprise, definite platybasia was discovered in the only patient studied from this point of view. This observation would bring the neurologic changes in line with those seen in multiple sclerosis or amyotrophic lateral sclerosis, which, according to Chamberlain, are related to platybasia. The parents of this patient refused to permit decompression through the foramen magnum or at the first cervical vertebra. Hence the opportunity to relieve the critical and possibly fatal phase of the disease was lost. Polycythemia was observed in 2 patients; in patient 1, whose disease was most advanced, the average erythrocyte count was 4,400,000 per cubic millimeter, while for patient 3, whose disorder was least advanced, the erythrocytes numbered 5,980,000. The erythrocyte count of patient 2 was 6,240,000. It is difficult to determine whether these observations are chance occurrences or are due to compensatory phenomena incident to the extreme deformity of the chest, with compression of the lungs and faulty aeration. Morquio's disease is most often confused with rickets of infancy, late rickets and renal rickets, and chondrodystrophy. These errors usually result when the diagnosis is made in the absence of a thorough roentgen examination. A detailed necropsy on a patient with osteochondrodystrophia deformans would prove illuminating. There is no known treatment for osteochondrodystrophia deformans. Constant orthopedic care may aid in preventing or correcting the deformities of the back and extremities. It may be possible to increase the growth of these patients with the growth-promoting factor of the anterior lobe of the pituitary, supplemented by proper diet and vitamins, as it is stimulated in patients with chondrodystrophy.

American Journal of Ophthalmology, Cincinnati

24:365-484 (April) 1941

Pathology of Carotid-Cavernous Aneurysms (Pulsating Exophthalmos). W. E. Dandy and R. H. Follis Jr., Baltimore.—p. 365.

Orbital Tumors and Their Surgical Treatment: Part I. A. B. Reese, New York.—p. 386.

Coloboma of Optic Nerve in Human Embryo. B. F. Payne, New York.—p. 395.

Equatorial Scleral Staphyloma and Retinal Detachment Cured by Excision. D. Vail, Cincinnati.—p. 403.

Relationship Between Myopia and Avitaminosis. J. Laval, New York.—p. 408.

Significance of Sturm's Interval in Refraction. A. D. Prangen, Rochester, Minn.—p. 413.

Functions of Relative Accommodation. M. Luckiesh and F. K. Moss, Cleveland.—p. 423.

Advances in Use of Sulfanilamide Compounds in Ophthalmology. J. S. Guyton and A. C. Woods, Baltimore.—p. 428.

American Journal of Physiology, Baltimore

132:571-822 (April) 1941. **Partial Index**

Mechanism of Vagal Effects on Pulmonary Ventilation. T. E. Boyd, Chicago.—p. 571.

Effect of Glycocoll (Glycine) Ingestion on Growth, Strength and Creatinine-Creatine Excretion in Man. A. S. Chaikelis, New York.—p. 578.

Studies on Choline Esterase Activity and Acetylcholine Content of Central Nervous System. R. Cortell, J. Feldman and E. Gellhorn, Chicago.—p. 588.

Reflex Studies After Muscle Transplantation. W. G. Watrous and J. M. D. Almsted, Berkeley, Calif.—p. 607.

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Effect of Thiamine on Intestine of B_1-Deficient Rat. M. Dick and J. R. Hege Jr., Durham, N. C.—p. 636.

Cerebral Blood Flow and Brain Metabolism During Insulin Hypoglycemia. H. E. Himwich, Albany, N. Y.; K. M. Bowman, C. Daly, New York, J. F. Fazekas; J. Wortis and W. Goldfarb, New York.—p. 640.

Inherent Inadequacies of Double Histamine Test for Studies on Pepsin Secretion. Gladys R. Bucher and A. C. Ivy, Chicago.—p. 654.

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Respiratory and Metabolic Effects of Hypothermia. D. B. Dill and W. H. Forbes, with technical assistance of F. Consolazio, Boston.—p. 685.

Is Histamine Able to Maintain an Augmented Pepsin Response Comparable to That of Pilocarpine? G. R. Bucher, A. C. Ivy and J. S. Gray, Chicago.—p. 698.

Quantitative Method for Measurement of Rate of Water Loss from Small Areas, with Results for Finger Tip, Toe Tip and Posterosuperior Portion of Pinna of Normal Resting Adults. C. Neumann, A. E. Cohn and G. E. Burch, New York.—p. 748.

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*Pharmacologic Shock Treatment of Schizophrenia: Two Year Follow-Up Study from New York State Hospitals with Some Recommendations for the Future. J. R. Ross, I. M. Rossman, W. B. Cline Jr., O. J. Schwoerer and B. Malzberg, Wingdale, N. Y.—p. 1007.

Continued Follow-Up Results in Insulin Shock Therapy and in Control Cases. E. D. Bond, Philadelphia.—p. 1024.

Curare: Preventive of Traumatic Complications in Convulsive Shock Therapy (Including Preliminary Report on Synthetic Curare-like Drug). A. E. Bennett, Omaha.—p. 1040.

Schizophrenic Psychoses: Report of 100 Cases in the U. S. Army. J. M. Caldwell Jr., Washington, D. C.—p. 1061.

Regression Neuroses and Schizophrenia: Analysis of Forty Cases in University Students. Annette C. Washburne and E. R. Hodgson, Madison, Wis.—p. 1073.

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Observation Nursery: Study of 250 Children in the Psychiatric Division of Bellevue Hospital. Lauretta Bender and Helen Yarnell, New York.—p. 1158.

Bulgarian Treatment of Parkinsonism, with Special Reference to Its Effect on Mental Symptoms. R. F. Gayle Jr., Richmond, Va., and J. B. Pettis, Staunton, Va.—p. 1175.

Etiology of Pellagra. J. G. Dewan, Toronto, Canada.—p. 1188.

Pharmacologic Shock Treatment of Schizophrenia.—According to Ross and his collaborators, insulin shock treatment of schizophrenia gives an improvement rate three times as much as that resulting from the usual institutional treatment. A follow-up study of the first 1,039 patients receiving shock therapy at least two years ago shows that 472, or 45.4 per cent, have had some improvement. Of 134 who recovered thirty days after treatment was completed, only 73 remained in this category one year later. Of 282 patients who were originally much improved, only 111 remained so one year later and 43 recovered. Of 263 patients who were improved only 108 remained so a year later, although an additional 27 were much improved and 11 recovered. Of the patients who recovered a year after treatment, 78.6 per cent remained recovered after another year, or two years after the termination of treatment. The respective two year figures for the much improved and improved patients are 74.8 and 54.5 per cent. The data show that the condition of the patients with dementia praecox treated with insulin has become practically stabilized with respect to any further deterioration and that approximately 45 per cent show some degree of lasting improvement. The recovery rate remained practically constant at 13 per cent. There was a greater stability of the original results of treatment among those patients whose disease was of short duration; that is, the shorter the duration the greater the maintained improvement.

American Journal of Public Health, New York

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Public Health Expands Its Facilities Under Title VI: Federal Social Security Act. E. R. Coffey, Washington, D. C.—p. 297.

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The Community Health Education Program: The Hartford Plan. B. G. Horning, Lucy S. Morgan, Beatrice Hall Kneeland and Alice H. Hammar, Hartford, Conn.—p. 310.

Public Health Applications of High Speed Photography. C. E. Turner, M. W. Jennison and H. E. Edgerton, Cambridge, Mass.—p. 319.

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Comparative Efficiency of Plating Mediums for Isolation of Shigella Dysenteriae. Catherine R. Mayfield and Maud Gober, Jackson, Miss.—p. 363.

American Journal of Tropical Medicine, Baltimore

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Control of Typhus Fever. R. E. Dyer, Washington, D. C.—p. 163.
*Treatment of Brucellosis with Brucella Antigens. M. R. Castaneda and C. C. Cardenas, Mexico, D. F.—p. 185.
Tenth Years' Observations on Malaria in Panama, with Reference to Occurrence of Variations in Parasite Index, During Continued Treatment with Atabrine and Plasmochin. H. C. Clark, W. H. W. Komp and D. M. Jobbins, Panama City, Republic of Panama.—p. 191.
Clinical Observations on Renal Insufficiency in Blackwater Fever: Report of Case. E. C. Toone Jr., Richmond, Va.—p. 217.
Historical Sketch of Prevalence of Malaria in North America. M. F. Boyd, Tallahassee, Fla.—p. 223.
Observations on Blood Proteins During Malaria Infections. M. F. Boyd, Tallahassee, Fla., and H. O. Proske, Wilson Dam, Ala.—p. 245.
Adaptations of White Men and Negroes to Prolonged Work in Humid Heat. S. Robinson, D. B. Dill, J. W. Wilson and M. Nielsen.—p. 261.
Bovine Trypanosomiasis in Panama. C. M. Johnson, Panama City, Republic of Panama.—p. 289.
Use of Baby Mice in Yellow Fever Studies. J. C. Bugher, Villavicencio, Colombia, South America.—p. 299.
Susceptibility to Yellow Fever of Vertebrates of Eastern Colombia: I. Marsupialia. J. C. Bugher, J. Boshell-Manrique, M. Roca-Garcia and R. M. Gilmore, Villavicencio, Colombia, South America.—p. 309.

Brucella Antigens for Undulant Fever.—Castaneda and Cardenas treated 35 cases of brucellosis with antigens prepared from the bacterial bodies by grinding Brucella of the three varieties (abortus, melitensis and suis). The treatment aimed to induce mild or no reactions, to desensitize the patient and to increase his immune resources. The results were not as striking as some reported by other workers, but a rapid and sustained improvement without severe reactions has been observed. Thus far there have been no deaths even among patients with unfavorable prognosis. Four patients with mild brucellosis were noticeably improved from nine to forty-five days after treatment was begun and continued to improve for twenty-nine, thirty-seven, fifty-one and one hundred and five days, respectively. After these intervals there was a slight fever followed by complete recovery. Twenty-five with severe Brucella infection began to recover from three to sixty days after the institution of treatment. Treatment was continued from one to four months. Slight fever was occasionally observed during the course of treatment, but it never formed a typical brucellosis wave. The 6 remaining patients presented a grave prognosis at the outset, though they reacted to the treatment in a relatively short time (within from eleven to fifty-two days). Because of the severity of their illness the patients were kept under specific treatment for from two and a half to four and a half months.

Annals of Otol., Rhin. and Laryngology, St. Louis

50:1-312 (March) 1941. **Partial Index**

Recognition, Treatment and Prevention of Hearing Impairment in Children. S. J. Crowe and C. F. Burnam, Baltimore.—p. 15.
Analysis of Ocular Fundus Changes in Otitic Sinus Thrombosis. I. Friesner, New York.—p. 32.
Diagnostic Significance of Partial Paralysis of Facial Nerve in Chronic Suppurative Otitis Media and Mastoiditis. H. I. Lillie, Rochester, Minn.—p. 38.
*Evaluation of Ménière Syndrome. W. E. Grove, Milwaukee.—p. 55.
War Deafness and Its Prevention. S. R. Guild, Baltimore.—p. 70.
Otologic Research and Its Recent Contributions to Clinical Otology. W. Hughson and Eva Thompson, Abington, Pa.—p. 77.
Progress in Conservation of Hearing. H. Newhart, Minneapolis.—p. 129.
Tinnitus Aurium in Light of Recent Research. E. P. Fowler, New York.—p. 139.
*Chemotherapy in Treatment of Complications of Acute Middle Ear Suppuration (Petrositis and Meningitis). J. R. Lindsay, Chicago.—p. 159.
Closure of Perforations of Membrana Tympani with Cargile's Membrane. W. D. Stinson, Memphis, Tenn.—p. 178.
Further Experiences in Fenestration of Labyrinth in Chronic Progressive Deafness: Report of Cases and Analysis of Results. E. H. Campbell, Philadelphia.—p. 182.
Surgical Treatment of Deafness: Report of Experiences with Endaural Labyrinthine Fenestration. M. S. Ersner and D. Myers, Philadelphia.—p. 206.

Evaluation of Ménière Syndrome.—Grove suggests that in determining the etiology of the Ménière syndrome more consideration be given to allergy, avitaminosis and disturbances in the endocrine balance than has been accorded heretofore. If the pathologic condition of the temporal bone described by Hallpike is correct for every case, then the main pathologic feature is a waterlogging or edema. This condition is probably a metabolic disturbance, but whether in a water balance or in sodium ion or both is not clear. The disturbance seems to find its greatest expression in the labyrinth, where it initiates vertigo, deafness and probably also some of the tinnitus. That all of the tinnitus does not originate in the end organ is evidenced by the fact that it persists in many cases after the labyrinth is destroyed or its nerves severed. It may be that the waterlogging is operative in the end organ and also in the central cochlear nuclei. Success of dehydration, sodium elimination and histamine treatment under proper hospital supervision suggests that the patient should first be treated medically before being submitted to surgical intervention. The latter should be reserved for patients who have not responded to a medical regimen, who, for economic or other reasons, cannot be kept on a medical regimen and for patients whose occupation precludes any benefit from medical treatment because of carelessness in following its routine. Of the surgical measures proposed, total section of the acoustic nerve is indicated when the hearing in the affected ear has fallen below a usable level, and differential section of the vestibular portion of the nerve when usable hearing is present. These operations should not be hazardous when performed by a competent neurosurgeon.

Chemotherapy for Complications of Acute Middle Ear Suppuration.—Lindsay reports 7 cases of diffuse suppurative meningitis, 1 case of cisternal meningitis and brain abscess, and 2 cases of petrous pyramid suppuration without an intracranial complication. Four of the meningitis cases were secondary to petrositis. All cases were complications of acute middle ear suppuration. There were 2 deaths. Diffuse meningitis of otogenic origin has recently been cured with chemotherapy without surgical intervention, and in 4 of the cases reported the same favorable result might possibly have been obtained without operation. In the presence of an abscess inside the dura or a focus of necrosis in the temporal bone and in the presence of an extradural abscess, chemotherapy alone fails to sterilize the focus. Concentrations of sulfanilamide of 14 or more mg. per hundred cubic centimeters of blood were maintained for from several days to two weeks without success. Symptoms were usually relieved but reappeared sometimes before, but usually after, the drug was withdrawn. Six of the 10 cases reported were of this latter type. It appears that chemotherapy alone is most likely to be successful in cases in which a complication has developed rapidly before gross destruction of bone has taken place, in the type of bone with pneumatization of the limited small cell type or in the presence of partial sclerosis. Chemotherapy appears to relieve the urgency of surgery, but, when clinical evidence indicates suppuration in the mastoid or pyramid, surgical exenteration and chemotherapy provide greater safety than chemotherapy alone. The protection afforded by chemotherapy should be the initial step in the treatment whenever an impending extension of suppuration is suggested. The masking of symptoms which follows chemotherapy apparently can be interpreted as a desirable effect, indicating a definite limitation of the infectious process. Greater vigilance may be necessary under chemotherapy, but when true indications for surgical drainage are present the drug seldom obviates its necessity. The efficacy of drug therapy depends largely on the extent of pneumatization. The virulence of the infecting organism and the degree of the host's resistance represented by immune bodies in the blood serum are other factors which influence the success of drug therapy. Synergistic action of sulfanilamide and immune serum has been claimed experimentally, and it may have clinical significance. Recurrences or exacerbations of meningitis developed in 3 patients after the blood concentration of the drug had been allowed to decrease to 6 or 7 mg. per hundred cubic centimeters when the disease appeared to be subsiding. The disease thereafter was prolonged and more resistant to therapy. The best results were obtained when an initial blood level of 15 or more mg. per hundred cubic centimeters was maintained for from five to seven or more days, decreasing it only two or three days after the spinal fluid approached normal. The widespread use of the sulfon-

amide drugs appears to have reduced the number of surgical operations. However, in certain cases moderate concentrations of the drug do not prevent the development of surgical complications.

Archives of Internal Medicine, Chicago

67:709-894 (April) 1941

*Vascular Allergy: Pathogenesis of Bronchial Asthma with Recurrent Pulmonary Infiltrations and Eosinophilic Polyserositis. J. Harkavy, New York.—p. 709.

Chronic Hemolytic Anemia with Paroxysmal Nocturnal Hemoglobinemia: Report of Case with Only Occasional Hemoglobinuria and with Complete Autopsy. G. C. Ham and H. M. Horack, Philadelphia.—p. 735.

Present Status of Nicotinic Acid. V. P. Sydenstricker, Augusta, Ga.—p. 746.

Electrocardiographic Studies in Case of Periodic Paralysis. B. Stoll and S. Nisnewitz, Brooklyn.—p. 755.

*Precocious Puberty and Tumors of Hypothalamus: Report of Case and Review of Literature, with Pathophysiologic Explanation of Precocious Sexual Syndrome. L. M. Weinberger, Chicago, and F. C. Grant, Philadelphia.—p. 762.

Clinical Studies on Vitamin B_1 Excretion Determined by Fermentation Method. H. Pollack, M. Ellenberg and H. Dolger, New York.—p. 793.

Clinical Studies on Blood Diastase: I. Low Blood Diastase as Index of Impaired Hepatic Function. S. H. Gray, J. G. Probstein and C. J. Heifetz, St. Louis.—p. 805.

Id.: II. Significance of Increased Blood Diastase. C. J. Heifetz, J. G. Probstein and S. H. Gray, St. Louis.—p. 819.

Effect of Edema and Integumentary Infiltrations on Basal Metabolism, Electrocardiogram and Blood Cholesterol. E. Moschcowitz, New York.—p. 828.

*Persons Lacking Sweat Glands: Hereditary Ectodermal Dysplasia of Anhidrotic Type. F. W. Sunderman, Philadelphia.—p. 846.

Clinical Use of Sulfamethylthiazole. W. H. Kammerer, M. Kalkstein and S. Solomon, New York.—p. 855.

Liver and Biliary Tract: Review for 1940. C. H. Greene, New York.—p. 867.

Vascular Allergy.—Harkavy discusses types of vascular sensitization as manifested by 8 patients in whom, with a single exception, asthma was the cardinal symptom. He believes that the asthma was but one expression of the underlying vascular allergy and that it appeared concurrently or alternately when other tissues subject to the same allergenic stimulation were involved. With one exception (bronchospasm and cough), the patients came to the hospital because of severe bronchial asthma. Inquiry revealed the existence of allergy in the families of 2, and a personal history in 4. The intradermal cutaneous tests of 5 patients disclosed positive reactions to pollens and foods. The reactions were clinically significant only in 3. The major etiologic role was attributed in most of the patients to bacterial allergy emanating from chronically infected sinuses. Coincident with the asthmatic attacks, interstitial pulmonary infiltrations, abnormal electrocardiographic changes and pleural effusions of eosinophils appeared in 6 of the patients, and in 3 there was pericardial involvement. These signs were reversible and disappeared with the asthmatic seizures in 4, only to recur with their recrudescence. In the patient who did not have asthma, in addition to the pleuropulmonary infiltrations and electrocardiographic changes there was swelling of the elbow and a hemorrhagic necrotic lesion in Scarpa's triangle. All this disappeared with the recovery of the patient in three months. Biopsy from the necrotic lesion showed an inflammatory reaction with perivascular infiltration of eosinophils, and the nodule showed areas of periarteritis nodosa. Acute pericarditis, the pericardial reaction, reverted to normal within three weeks in 1 case and progressed in 2 to a chronic adhesive stage. The electrocardiographic abnormalities consisted in deflections and amplitudes of the T waves and the QRS complexes. These remained permanent in 2 patients who ultimately died. The occurrence of eosinophils in the sputum, in the serous exudates and in the perivascular infiltrations in the skin, associated with periarteritis nodosa in the 1 case, implies active involvement with increased permeability of vessels of the lungs, serous membranes and cutaneous tissues. Thus it might be assumed that the recurrent interstitial pulmonary infiltrations revealed on roentgen examination, accompanied by eosinophils in the sputum, eosinophilic exudates in the pleura and the electrocardiographic changes, were probably also due to hyperergic vascular reactions in these tissues similar to those revealed by biopsies of the skin. As the asthmatic paroxysms ran a course parallel with that of the pulmonary lesions, they may be considered as symptomatic expressions of the underlying reactions in the vessels of the lungs and bronchi. Since the asthmatic seizures and the altered vascular responses in other shock organs appeared simultaneously and were evidently dependent on the same allergenic stimulation, they must be regarded as but one aspect of a more diffuse vascular and mesodermal reaction. The serous membrane and cardiac reactions suggest that they were sequelae of hyperergic vascular reactions. The concurrent reversible elctrocardiographic changes with the asthma and the pleuropulmonary lesions were probably influenced by the same mechanism. In 1 of the 2 cases in which these changes were irreversible, thickening of small arteries, arteritis and perivascular fibrosis were found in the myocardium at necropsy. The increase in eosinophils and leukocytes in the bone marrow indicates that the marrow participated as a shock organ.

Precocious Puberty and Tumors of Hypothalamus.—Weinberger and Grant report a case of precocious puberty accompanied by hypothalamic tumor, this being the seventeenth instance recorded. The tumor was a glioma of the third ventricle and the hypothalamus. Apart from the unusual clinical features, it is the second instance of precocious puberty to be studied from the endocrinologic point of view. The patient, a boy of 7 years and 11 months, survived an operation (performed two and a half months before the time of writing) in which a large mass of the tumor was removed. On the basis of endocrinologic studies the authors offer the following explanation of the genesis of precocious puberty: Lesions of the posterior portion of the hypothalamus interrupt nerve pathways or interfere with mechanisms which normally inhibit and control the production and release of gonadotropic substances from the anterior lobe of the hypophysis. The excessive liberation of these pituitary substances stimulates the ovaries or the interstitial cells of the testes to overproduction of their respective estrogenic or androgenic substances responsible for the development of secondary sexual characters. The proof of the hyperactivity of the anterior lobe of the hypophysis is found indirectly in the presence of abnormally large amounts of estrogenic and androgenic substances in the urine of patients with precocious puberty. The clinical features of the authors' patient did not emphasize involvement of the hypothalamus. This was not unusual, as the tumor largely involved the posterior segment of the hypothalamus. Vegetative symptoms (somnolence, adiposity, diabetes insipidus and polyphagia), by which a hypothalamic tumor may be recognized, are usually present when the anterior portion of the hypothalamus is involved. In their patient the available observations indirectly point to predominant involvement of the posterior part of the hypothalamus. All the physical attributes of puberty, if not of adulthood, were present. Of particular interest was the presence of seminal fluid containing a full complement of motile spermatozoa. This indicates that the gonadotropic principle of the anterior lobe of the pituitary (the follicle stimulating factor) was present in sufficient amount to stimulate the spermatogenic cells to mature activity. Further proof of activity of the testicular interstitial cells is to be had from the adult amounts of androgenic substance assayed in the urine. The interstitial cells are dependent for their stimulation and activation on the second principle from the anterior lobe of the pituitary, the luteinizing gonadotropic factor. Thus there is satisfactory indirect evidence that the anterior lobe of the hypophysis was releasing excessive quantities of the gonad stimulating substances. Whereas the patient's urine contained as high as 45 international units of an androgen in a twenty-four hour specimen, the normal daily excretion of androgen in an 8 year old boy is, according to Nathanson, Towne and Aub, from 6 to 9.9 international units. The final and conclusive link must await the experimental attempt to produce precocious puberty in young animals by producing similar lesions in the posterior portion of the hypothalamus.

Persons Lacking Sweat Glands.—Sunderman reports the occurrence of hereditary ectodermal dysplasia in 3 brothers, members of a family of 10 children of Italian parents. A cursory survey of the parents and the 7 other children shows them to be apparently normal and relatively healthy with no apparent congenital defects. Although no accurate genealogic

data are available, it is asserted that the grandparents, aunts, uncles and cousins presented none of the defects observed in the 3 brothers, who, it is said, appeared normal at birth and during early infancy. The chief complaints of the 3 patients are fever and headache when exposed to high temperatures. As the patients grew older, normal deciduous teeth failed to develop, they never perspired and 2 of them could not shed tears. In childhood their noses became of the saddle type and their lips negroid. Hair failed to appear over their extremities, and the hair of their scalps, pubes and axillas was sparse. The 2 older boys (20 and 22, the third is 5) complained of a continuous, fetid nasal discharge since childhood and observed that they had lost their ability to distinguish odors. They have been extremely intolerant of high temperatures, and during the last few summers the 2 older ones found it necessary to apply water over their underclothing to keep reasonably cool. Neither of the 2 older patients is capable of performing physical work during the summer months. The 2 older patients have kept interval records of their oral temperature; during March and April, taken four times daily, it ranged from 97.4 to 98.6 F. and during July and August from 97 to 102.6 F. The lowest temperatures were usually observed during the morning and the highest in the afternoon and evening. Increase in the respiratory and pulse rates was coincident with elevations in the temperature. The 3 brothers have all been alert, cooperative and of normal intelligence. The 2 older patients graduated from high school with rank in the upper third of their classes. During their school years medical attention was focused principally on their unexplained fever. It is suggested that the sweating response of certain persons suffering with unexplained fever might profitably be investigated. The effects of exposure to a high environmental temperature for thirty minutes were studied in 2 of the patients and compared with 2 control subjects. In the patients the loss of weight corresponded approximately to the insensible loss that normally occurs in resting persons at normal temperatures; in the 2 control subjects the loss was about sixteen times as great. In the 2 patients hyperpnea and diuresis ensued; in the control subjects they did not.

Archives of Ophthalmology, Chicago

25:539-760 (April) 1941

Development and Prevention of Myopia at the United States Naval Academy. R. Hayden, Annapolis, Md.—p. 539.
*Treatment of Thrombosis in Central Vein of Retina with Heparin. R. L. Rea, London, England.—p. 548.
Some Practical Considerations Pertaining to Corneal Edema. D. G. Cogan, Boston.—p. 552.
Ocular Findings Associated with Dysostosis Multiplex and Morquio's Disease: Report of a Case of the Former. C. A. Veasey Jr., Spokane, Wash.—p. 557.
Mechanics of Optic Nerve Traction on Retina During Ocular Rotation, with Special Reference to Retinal Detachment. B. Friedman, New York.—p. 564.
Characteristics of Sensitometric Refraction. M. Luckiesh and F. K. Moss, Cleveland.—p. 576.
Principles of Susrutian Ocular Therapy Interpreted in the Light of Modern Ophthalmic Science, with Brief Study on Evolution of Ocular Therapeutics from Prehistoric Age Up to the Modern Period. N. K. Bidyädhar, Sonpur Raj, Orissa, India.—p. 582.
Dictyoma in Early Stage: Report of Case. H. Imre, Budapest, Hungary.—p. 629.
Orbital Implants, with Special Reference to Vitallium. W. B. Doherty, New York.—p. 637.
Causes of Blindness in Hawaii. W. J. Holmes and Grace C. Hamman, Honolulu, Territory of Hawaii.—p. 643.
Prism Compensation in Cases of Anisometropia. P. L. Cusick and H. W. Hawn, Rochester, Minn.—p. 651.
*Treatment of Gonorrheal Diseases of Eye with Sulfanilamide: Three Years' Clinical Experience. C. R. Mullen, Philadelphia.—p. 655.
Uveoparotitis (Heerfordt): Note on Prognosis. S. I. Kaufman, Chicago.—p. 659.
Blackberry Thorn in Anterior Chamber of Eye for Twelve Years. E. C. Albers, Champaign, Ill.—p. 662.
Supernumerary Caruncle: Report of Case. B. Friedman, New York.—p. 664.
Gonioscopy and Glaucoma. H. S. Sugar, Chicago.—p. 674.

Heparin for Thrombosis of Central Retinal Vein.—Rea administered heparin to 5 patients with thrombosis of the central vein of the retina; 3 had complete trunk thrombosis and 2 branch thrombosis. Failure was complete in only 1 instance of trunk thrombosis; the eye became glaucomatous and blind. In the remaining 2 some improvement was evident. In the 2 patients with branch thrombosis complete cure resulted, central vision in each being 6/6. In one of these patients vision rose from 6/36 on July 21 to 6/6 on October 21 and has remained the same since; the retina has been absolutely free from hemorrhages. The author points out that heparin can also be used for extensive hemorrhage into the retina or the vitreous. The cost of the product is the greatest obstacle to therapy. It is not necessary to keep the patient in bed. Ambulatory patients can have two injections daily, each from 100 to 125 mg. The needle should not be too small and, when the injection is made into the vein, slight pressure should be applied to prevent noncoagulable blood from escaping into the subcutaneous tissues.

Sulfanilamide for Gonorrheal Ophthalmia.—According to Mullen, 42 patients with gonorrheal infection of the eye have been treated with sulfanilamide administered locally and internally. The therapy decreased the incidence of corneal complications and the period of hospitalization. It is the belief of the physicians in the ocular services at the Philadelphia General Hospital that if this treatment is followed rigidly gonorrheal ophthalmia will become one of the less serious ocular diseases. Of the 42 patients 14 were infants with ophthalmia neonatorum of gonorrheal origin, and 28 had gonorrheal infection of the conjunctiva and cornea. All the infants were discharged without corneal involvement, but there were 5 patients with corneal complications on discharge among the 28 other patients. The treatment now followed at the Philadelphia General Hospital is to give sulfanilamide internally in doses of from 1 to 2 grains (0.065 to 0.12 Gm.) per pound of body weight, but never more than 100 grains (6 Gm.), for the first twenty-four hours of hospitalization. The involved eye is irrigated with 2 per cent solution of boric acid followed by free instillation of an 0.8 per cent solution of sulfanilamide every ten minutes day and night. For infants the prescribed amount of sulfanilamide is crushed and placed in water in a feeding bottle. Studies of the blood are performed before and during treatment. Toxic effects of sulfanilamide have not been encountered. After twenty-four hours of treatment the internal dose of the drug is decreased to ¼ to ½ grain (0.016 to 0.03 Gm.) for each pound of body weight, and local irrigations are continued at longer intervals. The use of a 0.25 to 1 per cent solution of atropine sulfate (strengths vary according to the patient's age), iced wet applications for ten minutes every hour and a Bullar shield when only one eye is involved complete the therapeutic measures. No patient is ready for discharge until results of examination have been negative on three successive days and there are no sequelae or complications requiring further treatment. After three years the method has evolved itself into almost a constant series of treatments during the first twenty-four hours. Even a meal or a feeding is not completed without interruption for irrigation and instillation of solution of sulfanilamide. Up to now the number of patients admitted each year has not decreased, but there has been a definite decrease in the number discharged with corneal involvement.

Archives of Physical Therapy, Chicago

22:193-256 (April) 1941

*Present Status of Ultraviolet Irradiation. F. H. Krusen, Rochester, Minn.—p. 199.
Use of Thermophore for Detachment of Retina. H. M. Langdon, Philadelphia.—p. 212.
Present Status of Radiation Therapy in Nasal Sinusitis. A. G. Levin, Miami, Fla.—p. 217.
Principles of Radiation Therapy of Head and Neck Neoplasms. G. A. Robinson, New York.—p. 220.
Newer Developments in Orthoptics, with Reference to Reading Problems. O. B. Nugent, Chicago, and Vivienne Ilg, Evanston, Ill.—p. 225.
Conduct of an Orthoptic Clinic. I. S. Tassman, Philadelphia.—p. 232.

Present Status of Ultraviolet Irradiation.—Krusen states that ultraviolet irradiation produces photochemical effects which activate substances in the skin and possibly in the blood. The rays also produce biologic effects, stimulation of metabolism, cellular activity, growth and circulation. Ultraviolet radiation in wavelengths shorter than 315 millimicrons will prevent and cure rickets. Irradiation with these wavelengths will impart an antirachitic potency to fats, milk, ergosterol, 7-dehydrocholesterol (eleidin), oils and vegetables. Such radiation causes

delayed or latent erythema of the skin in human beings, improves the tone, color and elasticity of the skin and presumably increases the cutaneous secretory and protective powers. Ultraviolet irradiation increases the active oxygen content of the lipids of the skin and thus enhances their bactericidal action. General exposure to ultraviolet radiation will increase the number of erythrocytes, leukocytes, blood platelets and hemoglobin of the circulating blood and will decrease the hydrogen ion concentration, coagulation time and eventually the blood volume. A transient lowering of blood pressure follows exposure to ultraviolet rays. Wavelengths longer than 290 millimicrons presumably have stimulative effects on the human body. Wavelengths shorter than 290 millimicrons may be lethal to cells of the human body. General exposures to ultraviolet rays improve muscular tone and increase protein metabolism and mineral metabolism and the ability of the organism to utilize more effectively materials which are present but not absorbed from the intestine. Ultraviolet irradiation imparts an antirachitic potency to cow's milk and pregnant or nursing mothers.

Canadian Medical Association Journal, Montreal

44:327-440 (April) 1941

Recent Advances in Medicine—Etiology and Therapy. A. H. Gordon, Montreal.—p. 329.
War Wounds. W. E. Gallie, Toronto.—p. 338.
Emphysema Under 40: Clinical and Pathologic Significance. P. M. Andrus, London, Ont.—p. 344.
Psychologic Factors in Aviation. M. R. Harrower-Erickson, Montreal.—p. 348.
*Intracranial Use of Sulfonamides: Experimental Study of Histology and Rate of Absorption. E. F. Hurteau, Montreal.—p. 352.
Glomus Tumors: Clinical Picture and Physiology. J. H. Couch, Toronto.—p. 356.
*Pathology of Glomus Tumors. A. J. Blanchard, Toronto.—p. 357.
Primary Carcinoma of Ureter. F. Pilcher and D. S. Macnab, Calgary, Alta.—p. 361.
Multiple Glomus Tumors: Four in One Finger Tip. B. Plewes, Toronto.—p. 364.
Etiology of Sydenham's Chorea: Electroencephalographic Studies. S. J. Usher and H. H. Jasper, Montreal.—p. 365.
Bacteriology of Acute Otitis Media and Its Course Under New and Old Methods of Treatment. E. P. Fowler Jr., New York.—p. 372.
Dietary Management of Intestinal Tuberculosis. A. S. Kennedy, in collaboration with O. Snider, J. S. Hazen and C. McLean, Hamilton, Ont.—p. 380.
Management of Nutritional Anemia of Infancy. K. L. McAlpine, London, Ont.—p. 386.
Upper Abdominal Pitfalls: Differential Diagnosis and Surgical Treatment. G. H. Stobie, Belleville, Ont.—p. 390.
Combined Nupercaine Spinal and Cyclopropane Anesthesia. R. H. Meredith, Toronto.—p. 394.
General Evolution of Acquired Syphilis. A. Marin, Montreal.—p. 397.
Test for Activity in Pulmonary Tuberculosis: Study of 200 Cases. S. H. Martin and P. S. Yu, Seoul, Korea.—p. 399.

Intracranial Use of Sulfonamides.—Hurteau inserted powdered sulfanilamide, sulfapyridine or sulfathiazole into one of two cerebral wounds made in 25 cats. The other wound was used as a control. The operations were carried out under aseptic technic. The results obtained rule out any contraindications to the use of these drugs in this manner. There were accumulations of polymorphonuclear leukocytes about the meninges in several cats inconsistent with observations in others. The distribution of these accumulations and the fact that they were present in both wounds and remained in the treated wound after the drug was completely absorbed suggested that they were due to the presence of foreign bodies (silver clips and sutures). This was proved conclusively in 2 cats in which a silver clip was placed in the wound without the drug but not in the wound containing the drug, and the leukocyte reaction was seen only about the silver clip. The drug was seen macroscopically or microscopically as late as twenty days. The drug even while present caused but a minimal focal foreign body reaction. There was no constant evidence of neuron destruction or glial reaction resulting from its application to incised cerebral wounds. The ultimate healing of wounds in no way suggested that they increase scarring or are carcinogenic. Sulfapyridine was the slowest to be absorbed but could not be detected after thirty-four days; sulfathiazole could not be detected after seventeen days and sulfanilamide after eleven days.

Glomus Tumors.—Blanchard regards glomus tumor as a benign overgrowth of the normal cutaneous glomus. It reproduces the microscopic picture of the normal glomus, showing an increased number of vascular channels and a corresponding hyperplasia of glomus cells. The tumors are single but may be multiple and may occur anywhere in the skin but particularly under finger and toe nails. The tumors are surrounded by a fairly definite collagenous capsule and are composed of a network of vascular channels simulating those of the normal glomus. These channels are lined by a single layer of flattened or slightly swollen endothelial cells, and external to this layer are varying numbers of glomus cells. Some of the channels have a zone of collagenous fibers separating the endothelium from the glomus cells. In some tumors the number of glomus cells are few and the tumors may suggest hemangioma. In others the cells are many and may even grow in dense compact sheets suggesting an epithelial tumor. In the latter, areas are present which resemble a normal glomus. The glomus cells as seen in tumors are similar to those in the normal cutaneous glomus but as a rule they are larger. They have round or oval, slightly vesicular, nuclei and an abundant pale or slightly cosinophilic cytoplasm. In the author's 4 cases there appeared to be no smooth muscle elements in the tumors. There may be considerable mucoid degeneration in the masses of the tumor cells. The tumors are encapsulated, and in the capsule as well as in the tumor proper are a number of nonmyelinated nerve fibers which can best be demonstrated by the Gros-Bielschowski method. Trauma is the only etiologic factor recognized, and it is not present in the majority of cases. The tumors are benign, and their excision usually produces a cure.

Cancer Research, Philadelphia

1:181-258 (March) 1941

Dietary Fat and Tumor Formation. P. S. Lavik and C. A. Baumann, Madison, Wis.—p. 181.
Tumor Glycolysis: IV. Effect of Feeding Thyroid Supplemented by Thiamine Chloride on Growth and Glycolysis of Walker Sarcoma 319 in Rats. Frances F. Beck and J. C. Krantz Jr., Baltimore.—p. 188.
Relation of Solar Radiation to Cancer Mortality in North America F. L. Apperly, Richmond, Va.—p. 191.
Effects of Spontaneous and Transplanted Rat and Mouse Tumors on Red and White Cells in Circulating Blood and Bone Marrow. H. T. Blumenthal, St. Louis.—p. 196.
Cultures in Vitro of Blood Cells, Bone Marrow and Myocardium from Leukotic Fowls. L. Doljanski and M. Pikovski, Jerusalem, Palestine.—p. 205.
Influence of Terminal B Avitaminosis with Attending Low Body Temperature on Growth Characteristics of Sarcoma 180. F. Bischoff and M. Louisa Long, Santa Barbara, Calif.—p. 217.
Effects of Reduced Temperatures on Growth and Metabolic Changes of Sarcoma 180 Grown in Vivo. Anna Goldfeder, New York.—p. 220.
Effect of Age on Connective Tissue of Uterus, Cervix and Vagina of Rat. Ethel Burack, J. M. Wolfe, Winifred Lansing and A. W. Wright, Albany, N. Y.—p. 227.
Structure and Origin of Uterine and Extragenital Fibroids Induced Experimentally in Guinea Pig by Prolonged Administration of Estrogens. A. Lipschütz and L. Vargas Jr., Santiago, Chile, South America.—p. 236.

Endocrinology, Los Angeles

28:521-680 (April) 1941. **Partial Index**

Vitamin B Complex and Adrenalectomy. W. G. Clark, Minneapolis.—p. 545.
Effect of Desoxycorticosterone Acetate on Early Pregnancy. H. O. Burdick and Evelyn J. Konanz, Alfred, N. Y.—p. 555.
Metabolism of Dogs with Permanent Diabetes Produced by Anterior Pituitary Extract. W. C. Dohan, A. H. Chambers and C. A. Fish, Philadelphia.—p. 566.
Percutaneous Administration of Estrogens Followed by Progestin in Inducing Sexual Receptivity in Spayed Guinea Pigs. J. A. Leighty, H. J. Wick and B. E. Jeffries, Indianapolis.—p. 593.
Influence of Delayed Resorption on Specific Gonadotropic Augmentation. F. Bischoff, Santa Barbara, Calif.—p. 611.
Effect of Testosterone Propionate, Estradiol Benzoate and Desoxycorticosterone Acetate on Kidneys of Adult Rats. J. B. Ludden, E. Krueger and I. S. Wright, New York.—p. 619.
Effect of Stilbestrol in Early Pregnancy. H. O. Burdick and Helen Vedder, Alfred, N. Y.—p. 629.
Rate of Absorption of Androgens and Estrogens in Free and Esterified Form from Subcutaneously Implanted Tablets. C. W. Emmens, London, England.—p. 633.
Influence of Testosterone on Distribution and Excretion of Creatine. M. Williamson and A. Gulick, Columbia, Mo.—p. 654.
Continuous and Discontinuous Treatment with Estrogens in Experimental Tumorigenesis. A. Lipschütz, F. Rodriguez and L. Vargas Jr., Santiago, Chile, South America.—p. 664.
Prevention of Experimental Uterine and Extrauterine Fibroids by Testosterone and Progesterone. A. Lipschütz and L. Vargas Jr., Santiago, Chile, South America.—p. 669.

Iowa State Medical Society Journal, Des Moines

31:181-230 (May) 1941

Basic Growth Types. A. A. Werner, St. Louis.—p. 181.
Sulfonamides in Puerperal Sepsis. A. W. Diddle and W. F. Mengert, Iowa City.—p. 189.
Statistical Review of 109 Consecutive Cholecystectomies. L. H. Kornder and R. C. Hovde, Davenport.—p. 192.
*Postmortem Cesarean Section. T. A. Moran, Melrose.—p. 195.

Postmortem Cesarean Section.—Moran reports a successful posthumous cesarean section and states that the available literature of the last decade contains 13 such cases. The patient had been under antepartum care since the third month of gestation and under observation for three years previously because of hypertension, when the author received an urgent call to come to her home. She was an obese multipara, 41 years of age, in the ninth month of her fourth pregnancy. Her last pregnancy was eighteen years before. The other 3 children were living and in good health. Previous urinalyses were negative for sugar and albumin. It was evident that she was suffering from a cerebral accident (from which her mother and sister died at 65 and 45 years of age respectively). She had stertorous breathing, the right arm and leg were completely paralyzed; she was unable to speak but could open her mouth and protrude her tongue when requested. Fetal heart tones could be heard but after a few hours were not positively discernible because of the patient's noisy respirations and the thickness of the abdominal wall. The cervix was not sufficiently dilated to admit the index finger. It was felt that death was inevitable in a few hours. The plan was to deliver the baby by cesarean section immediately after her death. She lapsed into coma and died eight and one-half hours after the onset of the stroke. Immediately after her death the abdomen was opened by a long incision. The uterus was opened in like manner and an 8 pound (3,840 Gm.) male infant was delivered. Efforts at resuscitation were begun even before the umbilical cord was severed. The baby was breathing regularly after fifteen minutes and crying lustily. He has since progressed normally.

Journal of Clin. Endocrinology, Springfield, Ill.

1:285-374 (April) 1941. **Partial Index**

Thyroid Deficiency: The Problem of Endemic Goiter in Yunnan Province. R. C. Robertson, Shanghai, China.—p. 285.
Cretinism: Lack of Response to Anterior Pituitary Growth Principle. E. E. Beard, Cleveland.—p. 293.
Diabetes Mellitus: Role of Excessive Carbohydrate Intake in Etiology of Diabetic Coma. I. A. Mirsky, A. N. Franzblau, N. Nelson and W. E. Nelson, Cincinnati.—p. 307.
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Adrenocortical Syndrome: Adrenal Cortex in Its Relation to Virilism. N. Mintz and S. H. Geist, New York.—p. 316.
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Menstrual Cycle: Effect of Progesterone on Normal Human Menstrual Cycle. J. Gillman, Johannesburg, South Africa.—p. 331.
Recurring Ulcerative Stomatitis and Vulvitis: Report on Patient Successfully Treated by Estrogen Administration. V. Moseley, Durham, N. C.—p. 346.
Eunuchoidism: Estrogen Treatment in Female Eunuchoid. M. A. Goldzieher and M. S. Adler, New York.—p. 349.
Male Hypogonadism; Clinical Effect of Oral Use of Methyl Testosterone in Eunuchoidism. C. S. Byron and P. Katzen, Brooklyn.—p. 359.

Journal of Experimental Medicine, New York

73:453-570 (April) 1941

Experimental Poliomyelitis in Cercopithecus Aethiops Sabaeus (the Green African Monkey) by Oral and Other Routes. J. D. Trask and J. R. Paul, New Haven, Conn.—p. 453.
Heterologous Transplantation of Mammalian Tumors: I. Transfer of Rabbit Tumors to Alien Species. H. S. N. Greene, Princeton, N. J.—p. 461.
Id.: II. Transfer of Human Tumors to Alien Species. H. S. N. Greene, Princeton, N. J.—p. 475.
New Growth Factor Required by Certain Hemolytic Streptococci. D. W. Woolley, New York.—p. 487.
Effect of Polysaccharide Splitting Enzyme on Streptococcic Infection. G. K. Hirst, New York.—p. 493.
Hereditary Transmission of Western Type of Equine Encephalomyelitis Virus in Wood Tick, Dermacentor Andersoni Stiles. J. T. Syverton and G. P. Berry, Rochester, N. Y.—p. 507.
Effect of Tyrosinase on Experimental Hypertension. H. A. Schroeder and M. H. Adams, New York.—p. 531.
Interaction of Host and Bacterium in Development of Communicability by Streptococcus Haemolyticus. A. F. Coburn and Ruth H. Pauli, New York.—p. 551.

Journal Industrial Hygiene & Toxicology, Baltimore

23:129-162 (April) 1941

Toxicology of Oxides of Nitrogen: I. Toxic Concentrations. L. W. La Towsky, E. L. MacQuiddy and J. P. Tollman, Omaha.—p. 129.
Id.: II. Physiologic Effects and Symptomatology. E. L. MacQuiddy, L. W. La Towsky, J. P. Tollman and A. I. Finlayson, Omaha.—p. 134.
Id.: III. Gross and Histologic Pathology. J. P. Tollman, L. W. La Towsky, E. L. MacQuiddy and S. Schonberger, Omaha.—p. 141.
Modified Eyepiece Micrometer for Use in Dust Counting. W. B. Harris, New York.—p. 148.
Quantitative Microchemical Colorimetric Determination of Carbon Disulfide in Air, Water and Biologic Fluids. R. W. McKee, Boston.—p. 151.

Journal of Investigative Dermatology, Baltimore

4:95-180 (April) 1941

Studies with Antigens: VII. Significance of Reactions to Intracutaneous Tests Performed with Extracts of Purified House Dust. B. G. Efron, C. H. Boatner and M. R. Pabst, New Orleans.—p. 95.
Chick Embryo as Culture Medium for Spirochaeta Pallida. U. J. Wile and J. S. Snow, Ann Arbor, Mich.—p. 103.
Further Studies in Arsphenamine Hypersensitiveness in Guinea Pigs: II. Attempts at Experimental Specific Sensitization of Guinea Pigs to Quinine, to Acetylsalicylic Acid and to Barbital, With and Without Preceding or Concomitant Arsphenamine Sensitization. W. Frei, New York.—p. 111.
Nutritional Dermatoses in Rat: III. Gangrene and Spontaneous Amputation of Digits Produced by Combined Deficiency of Vitamin B6 and Filtrate Components. M. Sullivan and Jane Nicholls.—p. 123.
*Prevention of Bismuth Gingivitis by Use of Sodium Hexametaphosphate. I. M. Felsher and K. K. Jones, Chicago.—p. 135.
Experimental Studies with Dermatophytes: III. Development and Duration of Immunity and Hypersensitivity in Guinea Pigs. E. D. DeLamater, New York.—p. 143.
Studies of Photosensitivity Due to Sulfanilamide. H. F. Blum, Washington, D. C.—p. 159.
Observations on Persistence of Sensitivity of Eczematous Type After Prolonged Periods of Removal from Contact with Allergen. Naomi M. Kanof and A. Rostenberg Jr., Washington, D. C.—p. 175.

Prevention of Bismuth Gingivitis.—Felsher and Jones found that sodium hexametaphosphate in a fine powder eliminates oral uncleanliness, tartar on enamel, carious teeth and roots and oral foci of infection responsible for the bluish pigmentation of the gums or more serious mucous membrane lesions of patients receiving bismuth therapy. Fifteen parts of it to eighty-five parts of talc was used on a tooth brush, and this was found to remove calcareous deposits, tartar and food deposits from teeth and gums, preventing formation of mucous plaques. It is not injurious to tissues. Patients in the syphilis clinic were instructed to use it as a tooth powder on a brush after each meal and at bed time. Of 150 patients under treatment during 1938 and 1939, 100 showed some oral manifestations attributable to bismuth. The use of this powder reduced noticeably the incidence and severity of bismuth reactions in the oral cavity. In 8 of the patients bismuth therapy was suspended or reduced because of rapidly progressive lesions of the buccal cavity. After from two to six weeks of using the powder, 6 of the patients were put on full doses of bismuth. In 1 patient with extensive foci of infection the powder failed to check a rapidly developing bismuth pigmentation accompanied by a severe ulcerative stomatitis. In six months, during which time use of the powder was persisted in and the patient received proper dental treatment, general tonics and no antisyphilitic therapy, full recovery was made with freedom from lesions or pigmentation in the mouth. A course of mapharsen and a course of bismuth in half doses given since has not been followed by signs of intolerance. The remaining patient of the group was a young woman receiving antisyphilitic treatment in the third trimester of pregnancy. After the first injection of bismuth a severe stomatitis and gingivitis followed. Several carious teeth with irritated alveolar processes were found. Previous mild caries was augmented by the decalcification process during pregnancy. The patient was given the powder to cleanse the mouth, and mapharsen was substituted for bismuth. In a few weeks the lesions in the mouth healed. The patient continued with arsenical injections to the end of her term. The results are inconclusive, as bismuth therapy was not resumed and its suspension was probably sufficient cause for recovery. Sodium hexametaphosphate did not intensify tooth decay. Four patients who retained an intolerance to bismuth, even after proper dental

care, and who before they began to use the powder were never able to finish a course of bismuth therapy because of heavy oral pigmentation or gingivitis and stomatitis, have all since the use of the metaphosphate powder been able to finish two or three full courses of bismuth with only mild reactions. Eight patients with definite indications for dental treatment, before antisyphilitic therapy was begun, were given the powder immediately after the examination, and in from one to three weeks they were able to begin bismuth injections while they were still receiving dental care. Inspection of the oral cavity during and after the bismuth course revealed only faint deposits on the gums. Of the 80 remaining patients some showed different degrees of pigmentation of the gums, others complained of a soreness of the gums, and the oral hygiene of others was poor. All these patients using the powder continued with their bismuth and arsenical therapy, and the pigmentation of some became fainter despite continued treatment, while in others the lesions did not progress. About one half of the patients who complained of soreness of the gums or mouth were relieved after using the powder. There was a definite improvement of the mouth hygiene in all those who had oral lesions.

Journal-Lancet, Minneapolis

61:105-142 (April) 1941

Early Diagnosis of Tuberculosis. K. Emerson, New York.—p. 105.
Tuberculosis Situation in Peking: October 1940. T. L. Kuo, Peking, China.—p. 106.
Various Tuberculous Lesions in One Family Group. E. J. Simons, Swanville, Minn.—p. 108.
Tuberculosis Among Student Nurses. B. S. Pollak and S. Cohen, Jersey City, N. J.—p. 111.
Complete Community Surveys for Tuberculosis. R. Davies, Nopeming, Minn.—p. 113.
Thoracic Surgery in the Insular Tuberculosis Service of Puerto Rico. J. Smith, Rio Piebras, Puerto Rico.—p. 122.
*Acute Respiratory Infections Including Lobar Pneumonia and Atypical Pneumonia in a Young Adult Group. C. A. McKinlay and D. W. Cowan, Minneapolis.—p. 125.
Intracapsular Cataract Extraction. W. H. Fink, Minneapolis.—p. 134.

Acute Respiratory Infections in Young Adults.—McKinlay and Cowan studied records of the University of Minnesota students whose respiratory infections were severe enough to warrant hospitalization in the students' infirmary. The study includes all hospitalized cases of acute infection of the upper part of the respiratory tract from the school year 1934-1935 through the school year 1939-1940 and all hospitalized cases of pneumonia from the school year 1930-1931 through the school year 1939-1940. There were more than 3,100 admissions. The following observations were made: 1. From 20 to 43 per cent of all admissions to the Students' Health Service hospital during the last six years were acute respiratory infections, including pneumonia. 2. The most frequent respiratory infection requiring hospitalization was the common cold and its complications (coryza, pharyngitis, laryngitis and tracheobronchitis). 3. Increases in the incidence of influenza and influenza-like infections have been observed on alternate years. 4. The incidence of follicular tonsillitis and follicular pharyngitis varied inversely with that of the influenza and influenza-like infections. 5. An analysis of leukocyte counts in the various diseases revealed that the highest counts occurred in follicular tonsillitis and pharyngitis, while the influenza group had the lowest counts. However, during 1937-1938 there was a distinct tendency toward a higher count in the influenza group than in other years. 6. Follicular tonsillitis and follicular pharyngitis had typical short courses with crisis-like defervescence regardless of treatment. Complications were uncommon. 7. During the last ten years there were 79 instances of frank lobar pneumonia with only 1 death. This low mortality is believed to be due largely to the great resilience of young adults, relative lack of chronic predisposing factors and prompt hospitalization and treatment. 8. During the last six years 92 students had pneumonia other than frank lobar pneumonia as compared with 61 instances of lobar pneumonia during the same period. There was only 1 death among the 92 patients. 9. About one half of patients with lobar pneumonia and about three fourths of those with other pneumonias gave histories of preceding infections of the upper part of the respiratory tract. However, an increased incidence of such respiratory infections does not necessarily cause an increase in the incidence of pneumonia. 10. During the last two years, particularly the school year 1938-1939, there was an increased incidence of "atypical pneumonia," while that of frank lobar pneumonia decreased. The most common etiologic agent isolated from the sputum of the patients with atypical pneumonia has been the streptococcus, rarely the pneumococcus. 11. Specific serum therapy and chemotherapy have lessened the intensity and duration of pneumonia. However, the low mortality among those who did not receive these forms of treatment emphasizes the importance of age in evaluating the results of special pneumonia therapy in large groups of patients.

Journal of Nutrition, Philadelphia

21:321-430 (April) 1941. **Partial Index**

Arsenic and Goiter. G. R. Sharpless and Margaret Metzger, Detroit. —p. 341.
Utilization of Calcium of Milk by Adults. Herta Breiter, Rosalind Mills, Julia Dwight, Beula McKey, Williamina Armstrong and Julia Outhouse, Urbana, Ill.—p. 351.
Basal Metabolism and Heat Loss of Young Women at Temperatures from 22 to 35 C. J. D. Hardy, A. T. Milhorat and E. F. Du Bois, with technical assistance of G. F. Soderstrom, New York.—p. 383.
Urinary Excretion of Thiamine on High Fat and High Carbohydrate Diets. W. M. Cahill, Detroit.—p. 411.

Journal of Thoracic Surgery, St. Louis

10:373-484 (April) 1941

*Differentiation of Bronchiogenic Carcinomas. P. W. Gebauer, Cleveland. —p. 373.
Surgical Aspects of Carcinoma of Esophagus: Review of Literature and Report of Four Cases. A. Ochsner and M. DeBakey, New Orleans. —p. 401.
Experimental Esophagogastrostomy. B. N. Carter, J. Stevenson and O. A. Abbott, Cincinnati.—p. 446.
Lobectomy in Case of Injury of Hilum of Lung: Report of Two Cases. O. W. F. Monod, Paris, France.—p. 475.
Experimental Pneumonectomy with Obliteration of Bronchial Stump. E. S. Stafford, Baltimore.—p. 480.

Differentiation of Bronchiogenic Carcinomas.—Gebauer believes that cancer of the lung cannot be regarded as a single entity and that bronchoscopy is of diagnostic value in early cases. The author epitomizes the data on 216 patients admitted to Cleveland City Hospital and diagnosed as having primary pulmonary carcinoma. Of 158 microscopically proved cases, small cell carcinoma was present in 53, adenocarcinoma in 32, squamous cell carcinoma in 61, carcinoma simplex in 5, and the material (aspiration biopsies, pleural fluid) in 7 was insufficient to make a diagnosis of tumor type. Sixty-six per cent of the small cell carcinomas arose in the main stem bronchi, 70 per cent of the adenocarcinomas arose in secondary branches, 20 per cent in small branch bronchi and 10 per cent in the main bronchi, and 70 per cent of squamous cell carcinomas originated in the first branches of the main stem bronchi. The earliest symptoms of bronchial cancers are cough, vague thoracic sensations, hemoptysis and pleural pain. The average period from the beginning of bronchiogenic carcinoma and death is between one and two and one-half years. The author is of the opinion that symptoms tend to occur early and that those patients with no pulmonary complaints until the tumor is advanced or until metastases occur are exceptions. Physical examination, bronchoscopy and even posteroanterior roentgenograms may be negative at the onset of symptoms, but special roentgen studies and careful bronchography will reveal the cause for the complaint. Despite the variable factors of age, site and size, the gross morbid anatomy of each of the three bronchogenic tumors is distinctive enough roentgenographically. Early in the course of the small cell carcinoma an irregular mass in the roentgenogram which blends with the mediastinum and does not have a sharp outline may be seen. The primary mass enlarges rapidly and extends into the mediastinum. The early roentgenogram of an adenocarcinoma frequently displays a sharply circumscribed, dense mass separate from the mediastinum. Late in the disease it is prone to produce secondary tumor nodules in both lungs. The early squamous cell carcinoma is seen as a nodule in the lung which is not entirely peripheral and less sharply circumscribed than the primary adenocarcinoma. The original tumor may be indistinct because of surrounding inflammatory infiltration. Because of their frequent origin in the main bronchus and a tendency to form large mediastinal masses, most small cell tumors show distortion and

fixation. Late in the disease the tracheobronchial tree is fixed. With adenocarcinoma, bronchoscopy may be negative despite a large tumor within the pulmonary parenchyma, or it may suggest an endobronchial tumor. Late in small cell carcinoma the mediastinal involvement may be extensive. When squamous cell carcinoma originates in the upper lobe bronchus, bronchoscopy may be negative; but if the bronchus is occluded there is a telltale mediastinal shift, a slight climb of the hilus, and it may be impossible to see the orifice. Occasionally a retrograde telescope will permit visualization. In all probability, if performed early, bronchoscopy will be negative in roughly 40 per cent of cases. Therefore a negative bronchoscopy means only that bronchography, sputum examination, aspiration biopsy or thoracoscopy should be performed until there is sufficient evidence to warrant exploration or a diagnosis is established. For if a tumor exists it is probably operable and one should not "wait to see what happens." Because of its central location, rapid growth and potent invasive and metastatic powers there is little hope that many cases of small cell carcinoma will be cured by excision. Tumors in secondary bronchi diagnosed early may be removed completely by pulmonectomy. Exploration is contraindicated when a large mediastinal mass, esophageal deformity and vocal cord or diaphragm paralysis are present. The same is true of a tumor within 2 cm. of the carina, enlarged, hard paratracheal lymph nodes and widening of the bifurcation with fixation of the carina. Adenocarcinoma arising in the periphery of the lung is most favorable for excision. Aspiration biopsy under fluoroscopic control should not be attempted in early tumors within the hilus or if pulmonary abscess exists. The delay incurred by repeated biopsies is probably more harmful than exploratory thoracotomy. Distant metastases, secondary nodules in the lung, pleural fluid containing tumor cells and bronchoscopic evidence of mediastinal invasion contraindicate surgery. The frequent origin of squamous cell carcinoma in secondary bronchi, slow growth and mild metastatic tendencies favor complete removal. Tumors arising in the lower lobe bronchi are within reach of the bronchoscope early and are so located that wide resection is feasible. The upper lobe tumors invade the hilus, encase the pulmonary artery and frequently involve the mediastinal pleura. Although extensions occur late, their microscopic diagnosis is difficult before they extend into the main bronchus; only exploration will yield material for biopsy. Horner's syndrome, brachial plexus disturbances, vocal cord or diaphragmatic paralysis, extensive rib destruction and extreme bronchial fixation contraindicate exploration.

Journal of Urology, Baltimore

45:513-646 (April) 1941

Unilateral Kidney with Partial Occlusion of Renal Artery Associated with Hypertension: Case Report. T. F. Riggs and R. W. Satterthwaite, Pierre, S. D.—p. 513.

Primary Carcinoma of Ureter: Report of Four Cases. H. M. Stang and A. J. Hertzog, Eau Claire, Wis.—p. 519.

Metastatic Ureteral Obstruction Following Carcinoma of Ovary: Report of Unusual Case of Pyonephrosis Resulting from Metastatic Carcinoma of Ureter. J. A. Lazarus, New York.—p. 527.

Mixed Leiomyoma and Lymphangioma of Epididymis: Report of Case. B. Halpert, New Orleans.—p. 536.

Effect of Testosterone Propionate on Benign Prostatic Hypertrophy. J. W. Draper, G. Slaughter and C. Denslow, New York.—p. 539.

Oral Administration of Methyl Testosterone in Male Castrate. Rita S. Finkler and G. M. Cohn, Newark, N. J.—p. 548.

Influence of Temperature on Internal Secretory Activity of Transplanted Ovaries in Male Rat. A. K. Lampton and A. J. Miller, Louisville, Ky.—p. 552.

Influence of Psoas Major Muscle on Kidney Function. D. K. Rose, St. Louis.—p. 558.

Pneumopyonephrosis in Diabetes Mellitus: Case Report. J. C. Alexander, Dallas, Texas.—p. 570.

Stones at Ureteropelvic Junction. H. M. Spence, Dallas, Texas.—p. 579.

Cutaneous Ureterostomy: Report of Twelve Cases. A. I. Folsom and H. A. O'Brien, Dallas, Texas.—p. 587.

Ureterocele. M. F. Campbell, New York.—p. 598.

Refinements in Technic Imperative for Successful Transurethral Prostatectomy. O. J. Wilhelmi, St. Louis.—p. 612.

Perineal Prostatectomy: Results in Primary Wound Closure. P. Adams, Omaha.—p. 622.

Four Simple Cystoscopic Rules for Successful Resection. H. S. Browne, Tulsa, Okla.—p. 633.

Experiences with Sulfathiazole in Treatment of Gonorrhea in Male. L. Stockwell, Kansas City, Mo.—p. 636.

Kentucky Medical Journal, Bowling Green

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Congenital Pyloric Stenosis. U. H. Smith, Louisville.—p. 129.

Hoarseness, an Important Symptom. S. Watkins, Louisville.—p. 134.

Lymphatic Leukemia. M. F. Beard, Louisville.—p. 138.

Historical Sketch of the Louisville Eye and Ear Society. C. K. Beck, Louisville.—p. 143.

Pentothal Sodium Anesthesia as Used in Small Hospital. Katherine Fisher, Murray.—p. 145.

Laryngoscope, St. Louis

51:315-398 (April) 1941

Examination in the History of Otology. V. Robinson, Philadelphia.—p. 315.

Endaural Fenestration of Horizontal Semicircular Canal for Otosclerosis: Indications, Technic, Observations as to Early and Late Postoperative Results. J. Lempert, New York.—p. 330.

Plastic Surgery of Nose. S. Cohen, Philadelphia.—p. 363.

Cellulitis of Face with Osteomyelitis of Frontal Bone as Complication. O. W. Thoeny, Phoenix, Ariz.—p. 378.

Acute Laryngotracheobronchitis with Reports of Fourteen Cases Which Came to Tracheotomy. G. O. Cummings, Portland, Maine.—p. 382.

Minnesota Medicine, St. Paul

24:215-292 (April) 1941

Gout—A Forgotten Disease. E. L. Tuohy, Duluth.—p. 215.

Practical Points in Female Sex Hormone Therapy. J. R. Manley, Duluth.—p. 219.

Diethylstilbestrol: Synthetic Estrogenic Hormone. M. H. Hoffman, St. Paul.—p. 222.

Diagnosis of Pancreatitis. M. W. Comfort, Rochester.—p. 225.

Extrapleural Pneumothorax. G. A. Hedberg, Nopeming.—p. 230.

Retinal Manifestations of Subacute Bacterial Endocarditis. P. S. Hagen, Boston.—p. 237.

Treatment and End Results in Appendicitis. R. F. Mueller, Two Harbors.—p. 243.

Appendectomies. C. G. Ochsner, Wabasha.—p. 249.

New England Journal of Medicine, Boston

224:583-626 (April 3) 1941

Treatment of Diabetes with Diet and Insulin. A. Marble, Boston.—p. 583.

Diabetes in Youth. Priscilla White, Boston.—p. 586.

Diabetic Hazards. E. P. Joslin, Boston.—p. 589.

*Treatment of Pneumococcic Pneumonia, with Special Reference to Use of Sulfathiazole, Intramuscular Serum, the Francis Test and Histaminase. C. A. Janeway and P. B. Beeson, Boston.—p. 592.

Pain Associated with Renal Aplasia: Report of Two Cases. H. S. Sabin and G. G. Smith, Boston.—p. 598.

Intussusception of Jejunum Due to Carcinoid Tumor. S. Mufson and E. A. Horowitz, New York.—p. 602.

Endoscopy. E. B. Benedict, Boston.—p. 605.

Treatment of Pneumococcic Pneumonia.—Janeway and Beeson report their experience with 80 cases of pneumococcic pneumonia treated between October 1939 and June 1940. All but a single case fell into one of the thirty-two pneumococcus types of Cooper. The average age of patients was 49 years. This is considerably above that usually reported. Bacteremia was found in only 10. That the gross mortality rate in a small series of cases depends considerably on chance is borne out by the 9 deaths in which the pneumonia was complicated by other serious debilitating diseases or was far advanced when therapy was begun. The general plan of treatment was to administer sulfapyridine or sulfathiazole to all patients and in addition to give serum to all patients with types of pneumonia for which serum was available. By giving serum the dosage of the drug can be reduced considerably. Patients not receiving sulfonamides eat better, and their convalescence is more rapid. Sulfathiazole is comparable to sulfapyridine in its effectiveness and has the advantage of causing less nausea than sulfapyridine. However, the urinary output must be carefully watched during its administration, as suppression of urine was its commonest toxic manifestation. In most cases it is not necessary to continue chemotherapy until liberation of antibodies is expected. Relapse seldom occurs if therapy is discontinued after three to four days. Serotherapy intramuscularly has the advantage of avoiding thermal reactions and in conjunction with chemotherapy is a practical procedure in many cases, especially when severe. The Francis test properly controlled aids in estimating serum dosage. Histaminase was not found to have any action in preventing the occurrence of serum sickness.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

28:337-516 (Jan.) 1941

Treatment of Tumors of Parotid Gland, with Special Reference to Total Parotidectomy. H. Bailey.—p. 337.
Mesenteric Vascular Occlusion. T. Moore.—p. 347.
Seminoma in Abdominal Testis with Glioma of Brain. M. J. Bennett-Jones and C. V. Harrison.—p. 357.
*Duodenal Diverticula and Their Complications, with Particular Reference to Acute Pancreatic Necrosis. R. F. Ogilvie.—p. 362.
Surgical Removal of Fasciola Hepatica from Common Bile Duct, with Commentary on This Infection in Man. P. Manson-Bahr and J. Walton.—p. 380.
Use of Fascial Graft in Cure of Inguinal Hernia. J. C. F. L. Williamson.—p. 384.
Bronchoscopic Clinic. J. E. G. McGibbon and E. T. Baker-Bates.—p. 404.
Secondary Infection in Tuberculous Sinuses. R. B. McMillan.—p. 415.
Persistent Intussusception in Adult: Case. N. F. Kirkman, with an anatomic note by T. Barlow and S. Mottershead.—p. 426.
Cartilaginous Tumor of Shaft of Ulna. T. V. Pearce and D. H. Collins.—p. 432.
Role of Vitamin C in Wound Healing. A. H. Hunt.—p. 436.
Cholesterosis of Gallbladder: Further Contribution to Histology of This Condition. W. A. Mackey.—p. 462.
Nutritional Edema as Complication of Jejunocolic Fistula. S. De Navasquez.—p. 468.
Antiseptics in Brain Wounds: Experimental Study of Histologic Reaction of Cerebral Tissues to Various Antiseptic Solutions. Dorothy S. Russell and M. A. Falconer.—p. 472.

Duodenal Diverticula and Pancreatic Necrosis.—The 4 cases reported by Ogilvie demonstrate that (1) a perivaterine diverticulum may produce definite obstruction of the pancreatic duct and (2) that the association of acute pancreatic necrosis with a perivaterine diverticulum is probably neither vague nor accidental but that the conditions may be related as effect and cause through the factor of duct obstruction. In case 1 the diverticulum produced gross obstruction and dilatation of both the pancreatic and common bile ducts, with resultant atrophy of the pancreas and death from obstructive jaundice. In cases 2, 3 and 4 the diverticulum was associated with acute pancreatic necrosis. These 3 cases favor the view that the disease of the pancreas is obstructive in origin. Complications of duodenal diverticula may be classified as obstruction (duodenum, common bile duct and pancreatic duct), diverticulitis (the possible sequelae of which are perforation, peridiverticulitis, duodenitis and cholangitis), content of calculi (enteroliths and gallstones) and carcinoma. Despite the frequency of duodenal diverticula as revealed by postmortem and roentgen investigations, complications are rare, but examples of each are found in the literature.

Lancet, London

1:407-436 (March 29) 1941

*Relative Value of Sulfonamides and Antiserums in Experimental Gas Gangrene. J. Gordon and J. W. McLeod.—p. 407.
*Prevention of Pyrexial Reactions in Intravenous Therapy. F. A. Knott and B. Leibel.—p. 409.
Oxygen Capacity of Blood After Soluble Hexobarbitone Anesthesia. E. A. Pask.—p. 411.
Toxic Manifestations of Antisyphilitic Therapy: Further Observations on Capillary Resistance. G. Horne and H. Scarborough.—p. 412.
Percutaneous Tuberculin Test. F. D. Hart.—p. 414.
Acute Lung Abscess Treated with Sulfapyridine. J. S. Richardson.—p. 415.

Sulfonamides and Antiserums in Experimental Gas Gangrene.—Gordon and McLeod state that from their experience in the control of experimentally induced gas gangrene infection in mice and guinea pigs, together with other work already published, it seems likely that the sulfanilamide drugs will have only a limited prophylactic value and that local administration is more useful than oral. The drugs are not likely to be useful in treatment except when a mixed infection with an aerobe susceptible to them exists. In experimental work the drugs are inferior to antiserums in the prophylaxis of gas gangrene. Antiserums are much more effective in prophylaxis than in treatment, and therefore while its prophylactic use is justified it is doubtful whether its therapeutic use is. It would therefore be well if the official recommendation to use antiserums only for treatment and not for prophylaxis were reversed, provided waste was avoided. However, there is no justification for withholding them from any person threatened with gas gangrene. Administration should take the form of multiple injections of serum into the muscles in the vicinity of the wound.

Tubercle, London

22:55-78 (March) 1941

The Folk-Lore of Pulmonary Tuberculosis. J. D. Rolleston.—p. 55.
*Extrapleural Pneumothorax: Review of Results. F. A. H. Simmonds and A. G. Hounslow.—p. 66.

Extrapleural Pneumothorax.—Simmonds and Hounslow discuss the results of forty-eight extrapleural pneumothoraces performed at least a year ago on 44 patients from 17 to 45 years of age. All the patients had careful sanatorium treatment, generally with long periods of rest in bed before and after operation. Operation was thought to be desirable in a patient with a still active lesion suitable for ordinary pneumothorax treatment but in whom the pleura was adherent. An intrapleural or extrapleural pneumothorax was established to control disease in the opposite lung of 10 patients. The sputum was positive for tubercle bacilli before forty-five of the operations and repeatedly negative in 3 patients. The immediate technical result was satisfactory following thirty-nine and unsatisfactory following nine operations. Patients were placed in the latter group if the size of the extrapleural space obtained was too small, the extrapleural adhesion was too dense to permit operation, the lung was injured or if the patient died during anesthesia before an incision was made. The extrapleural space of 4 patients was joined to an already existing intrapleural pneumothorax (extrapleural pneumolysis or fenestration). The stripping of the two layers of pleura from the wall of the chest should not be too extensive, as there is risk of hemorrhage, which constitutes a serious complication. The space should collapse at least the upper third of the lung as far as the hilus and, to be successful, the mediastinal surface should be freed. Some fluid formed in most patients. The space should be aspirated through a wide bore needle the day after the operation, all blood and serum removed and the space filled with air; otherwise the risk of losing the pneumothorax is considerable. The space is refilled daily for a few days and afterward at longer intervals according to roentgen indications. Seven patients died; anesthetic (no incision made), empyema and diabetes, and shock and hemorrhage were each the cause of 1 death, pulmonary injury caused the death of 2 and empyema the death of 2 patients. The present condition of the 44 patients (i. e. after an average of twenty-eight months of observation is quiescent in 26, improved in 3 and unsatisfactory in 5 and 10 patients died; 7 from the operation and 3 from pulmonary tuberculosis. At present the sputum of 30 patients is negative and of the remaining 4 positive. The space of 23 patients is still maintained as a pneumothorax. The pneumothorax of 11 patients was supplemented by phrenic nerve crushing on the same side, in 5 the extrapleural pneumothorax was converted to an oleothorax, 10 had pneumothorax of the other lung and 5 have had thoracoplasties. Paralysis of the diaphragm was found valuable in those patients in whom a cavity persisted, or formed, in the lung below the lower margin of the extrapleural space, and the operation appeared to control this complication and rendered the sputum negative in several cases. None of the 11 patients showed any evidence of massive collapse of the lower lobe. Conversion to oleothorax was thought desirable when the space showed a tendency to obliteration. The maneuver is worthy of further trial, although it is dangerous if the extrapleural operation has not been successful in closing cavities present before operation. Extrapleural pneumothorax was established in 4 of the 10 patients who had bilateral collapse and an intrapleural pneumothorax in the other 6. Two of the patients who had subsequent thoracoplasty had no extrapleural space created owing to the density of the adhesion between the pleura and the endothoracic fascia. In the other 3 the space obtained became obliterated and the disease again became active; 1 of these patients died immediately after thoracoplasty. The other 4 patients are well and the tuberculosis appears to be quiescent.

Annales Pædiatrici, Basel

156:65-128 (Jan.) 1941

*Treatment of "Summer Diarrhea" with Bacteriophage. A. Eckstein and I. Doğramaci.—p. 65.
New Aspects of Old Pirquet Reaction. E. Mayerhofer.—p. 84.
Treatment of Meningococcic Meningitis with Sulfapyridine. L. von Monakow.—p. 92.
Epidemiologic Aspects of the 1937 Epidemic of Poliomyelitis in Zurich. W. Abegg.—p. 115.
Activity Curve of Kathepsin of Gastric Juice. E. Freudenberg.—p. 124.

Bacteriophage in Treatment of "Summer Diarrhea."—Eckstein and Doğramaci report observations on the treatment of infants and young children with "summer diarrhea." The importance of this problem in warm countries like Turkey is evident from the summer peak in child mortality. Since purely dietetic treatment is ineffective in these infectious diarrheas, the authors resorted to treatment in moderately severe and severe cases with polyvalent antidysentery serum and obtained satisfactory results. In mild cases they employed successfully acetarsone, acetyltannic acid and calcium lactate. For some time the authors resorted to the use of bacteriophages. They report 268 cases, of which 200 were under dispensary care and 68 under clinic care. Of the dispensary group 30 were mild, 134 of moderate severity and 36 severe; the last group included 8 with toxicosis. The children were given daily for from one to six days 30 cc. of bacteriophage by mouth. The results were on the whole satisfactory. Only one, however, of the 8 cases of toxicity was cured. The others became aggravated or terminated in death. Results obtained in the clinic with the bacteriophage treatment were slightly less favorable than those obtained in the dispensary material, probably because of greater severity of the clinic cases. Of 40 children treated at the clinic with polyvalent antidysentery serum only 8 were not improved or cured. This confirms earlier favorable results with this therapy. The serum therapy appeared to be superior to bacteriophage. However, bacteriophage treatment is more simple because it is administered orally while serum must be injected. Serum treatment causes sensitization, which may result in complications in subsequent administration. More observations will be necessary to determine which method is preferable. Medicinal treatment (acetarsone, acetyltannic acid and calcium lactate) was effective in only one half of the 30 cases in which it was employed. Thus, it appears that under the same conditions the bacteriophage therapy is superior to the drug therapy. In cases with toxicosis the bacteriophage method is ineffective, whereas serum therapy is successful in about two thirds of the cases, thus making serum therapy the method of choice. The bacteriophage treatment requires less time than the medicinal treatment but more time than serum therapy. The authors feel that bacteriophage therapy of "summer diarrhea" calls for further investigation.

Gazzetta degli Ospedali e delle Cliniche, Milan

61:993-1012 (Dec. 15) 1940. **Partial Index**

*Bacteriology of Blood and Bone Marrow in Lobar Pneumonia. A. Cattaneo.—p. 995.

Bacteria in Blood and Bone Marrow in Pneumonia.—Cattaneo took cultures of the blood and sternal bone marrow from 106 patients with lobar pneumonia. Bacteremia was present in 18 cases, in all of which the same type pneumococcus was identified in the blood and in the marrow. Pneumococci persisted both in the blood and in the bone marrow all through the disease up to the time when fever abated or death occurred. Mortality amounted to 44 per cent for the group of patients with bacteremia and to 9 per cent in the group without bacteremia. The type percentage of pneumococci identified in the blood and bone marrow was 50 per cent for type III, 22.2 per cent for type I, 16.6 for type IV and 11.2 for type II. Pneumococci of the same type were identified from blood, bone marrow and sputum in all cases of bacteremia. The presence of pneumococci in the blood aggravates the prognosis. Pneumococcemia of types I, II and IV is not severe, while pneumococcemia of type III is fatal in almost all cases. Bacteremia is more frequent and of graver prognostic significance in patients over 40. Pneumococcemia of type III in old patients is fatal in 100 per cent. The method of repeatedly obtaining blood and marrow cultures has no advantage over that of single cultures.

Revista de la Assoc. Med. Argentina, Buenos Aires

55:85-170 (Feb. 15-28) 1941. **Partial Index**

*Sulfanilamide in Bronchopulmonary Suppuration. M. R. Castex, E. L. Capdehourat and A. Lavarello.—p. 85.
*Nasopharyngeal Torticollis. H. E. Querol and N. M. Estevez.—p. 148.

Sulfanilamide by Spray for Bronchopulmonary Suppuration.—Castex and his collaborators report several cases of bronchopulmonary suppuration in which various routine therapeutic methods, including large doses of sulfanilamide by mouth or by injection, have failed. From 3 to 5 cc. of a 5 per cent sulfanilamide solution was diluted in 25 cc. of distilled water and was sprayed through a mouth piece every four hours. The patient was asked to breathe through the mouth during the spraying with his nostrils closed. He was not allowed to wash his mouth or blow his nose immediately after spraying. The treatment was administered for about three months, about 50 Gm. of sulfanilamide being utilized. Improvement was evident from the first or second week, and it increased as the treatment progressed. The temperature became normal in about one or two weeks, the sputum gradually changed to normal, and the patient regained his appetite and gained in weight. The favorable change in the local condition could be followed in repeated roentgenograms. Treatment may be discontinued when fever, clinical symptoms and sputum are absent for some time and when there are signs of a satisfactory general condition, normal blood picture, normal sedimentation rate of the erythrocytes, disappearance of pathologic shadows and evidence of local fibrosis in roentgenograms. The authors believe that local sulfanilamide therapy attenuates the virulence of the bacteria, prevents a spread of the local infection to neighboring tissues and stimulates organic defense against the infection. The treatment is harmless and well tolerated.

Nasopharyngeal Torticollis.—Querol and Estevez direct attention to the type of acquired torticollis from acute trauma or suppuration of the nasopharynx. The head is inclined to one side but does not rotate. Roentgen examination of the cervical segment of the spine shows deviation without rotation of the head. The condition is due to posttraumatic contracture of the paravertebral muscles. Early immobilization of the neck in a Schanz collar maintained throughout the course of the nasopharyngeal condition prevents permanent torticollis. In the two cases reported by the authors early immobilization of the neck was resorted to. The patients were cured, and normal movements of the neck were restored.

Revista de Higiene, Bogotá

21:1-60 (May-June) 1940. **Partial Index**

*Blue Dermatosis of People of Chillos Plateau. J. J. Escobar A.—p. 38.

Tropical Blue Disease.—Escorbar describes a new type of chronic dermatosis among people who lived in the Colombian Chillos Plateau for a long time. The prominent lesions are squamous dermatitis on areas of dark blue pigmentation of the skin, alternating with areas of achromia and dyschromia, exfoliation and ulcerations of mucous membranes, especially those of lips and lids. Areas of normal pigmentation, such as those of the areola of the nipple and of the scrotum, are not involved. The bare parts of the body are more frequently involved than the protected parts. The sensitivity of the skin is well preserved. The lesions are not pruriginous. The morphologic blood picture is normal for persons of that region. The incidence is the same for peoples of different race, age and sex. Alopecia and general adenopathy are commonly present. The removed ganglions contain fine grains of pigment. Serologic tests for syphilis give strongly positive results in all cases. The patients, however, have neither a history nor clinical symptoms of syphilis. The ulcers follow a slow course and do not heal spontaneously. Spirochetes can be isolated from the skin, lesions, ulcers and ganglions. It is a new species of Spirochaeta, different from Spirochaeta pallida and Spirochaeta carateum. Administration of two doses of 0.3 and 0.4 Gm. of arsphenamine, respectively, results in disappearance of the spirochetes and cure of the lesions. The disease must be differentiated from vitiligo, leprosy, syphilis and caraate.

Archiv für Dermatologie und Syphilis, Berlin

181:1-138 (May 10) 1940. **Partial Index**

*Clinical Aspects and Etiology of Hodgkin's Disease. W. Richter.—p. 1.
Fibrohemangioma-Forming Syndrome of Lymph Glands and Skin, Which Is Related to Group of "Sarcomatosis Kaposi." E. Cappelli.—p. 12.
Clinical Observations on Behavior of Uliron and of Diseptal B and C in Organism of Patients with Gonorrhea. W. W. Kühnau.—p. 28.
Pathogenesis of Hypersensitivity to Flour and Persulfate in Persons Working with Flour. H. A. E. von Dishoeck and D. J. Roux.—p. 34.
Malarial Therapy of Syphilis. H. Strobel.—p. 41.
Cutaneous Metastases of Malignant Hypernephroid Tumors. F. Nödl.—p. 57.

Hodgkin's Disease.—Richter reports a case of Hodgkin's disease with cutaneous lesions presenting the picture of urticaria papulosa chronica perstans. His patient developed lymph node enlargement following injection of a solution of procaine hydrochloride-epinephrine in the course of dental treatment. He felt weak and complained of drawing pains. In the course of the next dental treatment the blood picture was examined every five minutes and a considerable increase in lymphocytes was noted. The leukocytes increased in numbers for twenty-five minutes following the injection and gradually subsided. The sedimentation speed was increased. Lymph nodes reacted in the same manner on subsequent dental treatments. Cultures from dental granulomas of the patient disclosed a mixed flora of staphylococci and streptococci. Two weeks after termination of dental treatment the lymph nodes were in the same condition as before the treatment. The cutaneous lesions showed appreciable improvement. The author calls attention to a report by Brugsch, who noticed an increase of myelocytes in the blood following injection of epinephrine in course of myeloid leukemia. The reaction observed indicates a special reactivity of lymph nodes, suggesting that the disease has its point of attack in the lymphatic tissue. A review of literature on the clinical characteristics and etiology of Hodgkin's disease with his own observations convinced the author that Hodgkin's is not caused by a specific micro-organism or virus, but that various organisms, their toxins or waste products of metabolism are the exciting factors. Special reactivity of lymph nodes appears to be essential for the development of Hodgkin's disease.

Gann, Tokyo

35:1-63 (Feb.) 1941. **Partial Index**

*Decomposition of Dipeptides by Carcinoma Serum. S. Ura.—p. 29.

Dipeptide Decomposition by Carcinoma Serum.—Using the technic of Waldschmidt-Leitz and Mayer (1939), Ura presents a comparative study of serum from carcinoma patients and from normal subjects in the decomposition of dipeptides. The substrate was prepared by mixing *d,l*-leucylglycin (1.87 Gm.), normal ammoniacal ammonium chloride buffer (8 cc.) and normal acetic acid (1 cc.) in 100 cc. of distilled water. The test mixture consisted of 3 cc. of the substrate and 6 cc. of serum, and the reaction was allowed to proceed at 30 C., p_H 8.0; the degree of decomposition was estimated on aliquots at twenty-four and forty-eight hours by titration with a tenth-normal potassium hydroxide solution in 98 per cent alcohol. The serums used in these studies were obtained from 41 patients with various types of carcinoma, 19 normal subjects and 38 patients with noncarcinomatous diseases. The author records the results of his observations as follows: (1) The decomposition power of serum from normal subjects on *d,l*-leucylglycin varied greatly, ranging at forty-eight hours from a maximum of 73.3 per cent to a minimum of 13.4 per cent, with an average of 41.9 per cent; (2) the serums of noncarcinomatous patients showed relatively uniform results, with approximately 40 per cent decomposition at forty-eight hours; (3) the serums of carcinoma patients exhibited a higher decomposition rate (from 13 to 29 per cent) than those of noncarcinomatous patients, the average being 53.3 per cent, with a maximum of 69.1 per cent in a case of the carcinoma of the esophagus and a minimum of 50.8 per cent in a case of the carcinoma of the mammary gland. In advanced cases of malignancy the rate of decomposition was high, although in individual cases the rate on the whole was surprisingly constant. In early cases surgical removal of the primary growths resulted in restoration of the dipeptide decomposition power of the serum to a nearly normal level. These results support the theory of Waldschmidt-Leitz and Mayer, who maintained that, owing to the presence of a peptidase in carcinoma serum as in contrast to normal serum, the former is capable of splitting over 50 per cent of racemose peptide (*d,l*-leucylglycin, *d,l*-glutaminyl-glycin, *d,l*-glutaminyl-glycin-ethyl-ester). This characteristic behavior of carcinoma serum may thus be utilized for diagnostic purposes.

Arkhiv Biologicheskikh Nauk, Leningrad

60:1-96 (No. 2) 1940. **Partial Index**

Phosphorus-Calcium Metabolism in Kashin-Beck Disease. N. V. Boldirev, E. D. Vishepan and S. M. Bychkov.—p. 11.
Experimental Skin Tuberculosis Under Conditions of Neurodystrophic Disturbances. A. I. Belousova.—p. 21.
*Preparation of Complete Antigen for Active Immunization Against Spring-Summer Encephalitis. E. N. Levkovich and A. A. Smorodintsev.—p. 56.
Experimental Data on Distribution of Virus of Autumn Encephalitis in Organism of White Mice and Rats. V. D. Neustroev.—p. 66.

Antigen for Active Immunization Against Spring-Summer Encephalitis.—Levkovich and Smorodintsev, working in the Department of Filtrable Viruses of VIEM, Moscow, demonstrated that formaldehyde in 1:500 or 1:750 concentration kills the virus of the spring-summer encephalitis when incubated for twenty days at refrigerator temperature, for six days at room temperature and for three days at a temperature of 37 C. Mice inoculated with this vaccine are immune to injection of 100 lethal doses of the virus. The antigenic and immunogenic properties of the fomaldehyde killed virus do not change on incubation in the refrigerator for at least two months. Vaccine prepared from the nonclarified brain emulsion of the virus possesses higher antigenic properties than that prepared from the clarified virus. The utilization of heterogenous tissue for the preparation of the vaccine does not alter its immunogenic properties. The vaccine prepared from the human brain proved as effective with regard to white mice as that prepared from the brain of mice infected with the virus. Virus killed by phenol, heat or ether does not show any antigenic activity. To obtain effective vaccines it is necessary to observe optimal correlation between the concentration of formaldehyde, the temperature and the time of contact with the virus.

Acta Orthopaedica Scandinavica, Copenhagen

11:129-342 (Nos. 3-4) 1940. **Partial Index**

Treatment of Congenital Clubfoot, Especially the Relapsing Cases. P. G. K. Bentzon and E. Thomasen.—p. 129.
Experiences with Operative Treatment of Inveterate Clubfoot in Older Children and Adults. H. Støren.—p. 135.
"Protruding Disks" in Lumbar Region. S. Friberg.—p. 138.
Palliative Subtrochanteric Osteotomy: Reexamination of Forty-Three Patients Treated in Cripples' Hospital, Copenhagen, in Period of 1926-1935. S. Franck and S. Klær.—p. 153.
*Fate of Poliomyelitic Patients of 1937 in Copenhagen. A. Monberg.—p. 184.
Apparatus for Firm Apposition of Resectional Surfaces in Intra-Atricular Arthrodesis. A. Hellstadius.—p. 190.

Fate of Poliomyelitic Patients.—Monberg discusses the residual disabilities of 101 patients discharged to their homes one and a half to two years previously for further treatment of their paralytic poliomyelitis whose acute attack was sustained in 1937. During 1937 there were also 25 patients who died during an acute attack of the disease and 61 who had poliomyelitis of a nonparalytic form. The surviving 101 patients with the paralytic form were divided into three groups: (1) mild, patients who are functionally well as the paralysis has subsided completely or merely left some slight defects of little inconvenience to ordinary physical activity; (2) moderate, patients whose functional capacity is lowered so that in order to earn their living or to do ordinary housework they must wear a supporting bandage or in whom transplantation of muscles or fixating operations on bones or joints were necessary to obtain stability of the paralyzed back or extremity, and (3) severe, patients disabled to such an extent that they are invalids in the legal sense of the term. On reexamination 58 cases are reckoned as mild, 24 as moderate and 19 as severe. Reexamination shows that the case mortality for the total material was 13.4 per cent and that complete disability in the legal sense of the term was the result in 10.2 per cent, while the remaining 76.4 per cent of patients were either fully restored or able to earn their living by working after treatment with stabilizing operations or supporting bandages.

Book Notices

Emergency Surgery. By Hamilton Bailey, F.R.C.S. Surgeon, Royal Northern Hospital, London. Fourth edition. Cloth. Price, $15. Pp. 944, with 930 illustrations. Baltimore: William Wood & Company, 1940.

That Hamilton Bailey's book has passed through three editions and two reprints since its appearance in October 1930 bespeaks of the favor with which it has been accepted by the profession at large. The fourth edition has been extensively revised because "a number of remarkable changes in the management of urgent surgical conditions have taken place." In brief the book deals, as one would expect from the title, with that branch of surgery in which the stricken patient requires immediate or urgent surgical intervention. The author treats the subject, as he says in the introduction, from the attitude "of a comparatively isolated surgeon called upon to carry out appropriate treatment." As a matter of fact the text is extremely comprehensive and in a remarkably able manner covers the subject of emergency surgery from almost any standpoint. The text is clearly printed and the material arranged in such a way as to be readily accessible. The numerous illustrations are well selected and help materially in explaining the text. The reviewer can well understand the popularity of the book and recommend it to all who are called on to treat emergency surgical patients. The subject of uncomplicated fractures is not considered.

Atlas of Electroencephalography. By Frederic A. Gibbs, M.D., and Erna L. Gibbs. Cloth. Price, $7. Pp. 221, with illustrations. Boston: The Authors, Boston City Hospital, 1941.

The medical reader who opens a book and realizes that a long hidden mystery of the human body stands revealed experiences the sort of thrill which must have chilled the spines of Columbus and Magellan when they first looked on unexplored lands. The brain is the most intricate and important organ in the body, and the most securely protected. But electrical science has opened doors of understanding which would never yield to the scalpel or the microscope. The success of this modern adventure is set forth in Dr. and Mrs. Gibbs's book.

The idea of a voyage over uncharted seas is suggested by the body of the book, 104 pages filled with undulating lines. These are life-sized reproductions of tracings of the electrical waves which arise in the cortex of normal persons and of patients. Sample tracings are given of normal persons of various ages and under various physiologic conditions. Pages are devoted to abnormal tracings from relatives of the epileptic and from other supposedly normal persons and also from patients with various complaints related to the central nervous system—epilepsy, hemiplegia, cerebral arteriosclerosis, meningitis, multiple sclerosis, chorea, narcolepsy, migraine, psychosis, dementia paralytica, hyperthyroidism, behavior disorders and so on. The method of localization of cerebral lesions is explained and illustrated. A thumbnail case history accompanies each tracing.

Because the technic of electroencephalography is subject to many artefacts, and interpretation of records, like the interpretation of roentgenograms, requires experience, this atlas is absolutely indispensable for any one proposing to work in this field. It explains the technic of making records and the various pitfalls to be avoided. However, the atlas is much more than a technician's manual. It opens with an unselfish tribute to Hans Berger, reviews the history of the new technic and discusses present knowledge of the significance of brain waves. Important to workers is the bibliography of some six hundred references to electroencephalography which have already appeared in medical literature. The atlas does not cover the Grass-Gibbs method of the electrical analysis of records. The addition of this subject sometime in the future would be reason for a new edition.

The desirability of reproducing tracings which are unreduced in size and of sufficient length makes the book unconventionally large: 12 by 15 inches and over 6 pounds in weight. It is too large for the ordinary shelf. Like the anatomic atlases of Vesalius, the volume will be treasured none the less. Not the least accomplishment is the price, which is only the cost of printing.

Klinika eksperimentalnoge B-avitaminoza. [By] M. S. Levinson. [Clinical Aspects of Experimental Avitaminosis B.] Paper. Price, 13 rubles. Pp. 248, with illustrations. Rostov on Don: Rostovskoe Oblastnoe Knigoizdatelstvo, 1939.

The monograph reports a study whose aim was to trace in animal experiment the clinical course of the B complex avitaminosis from its earliest manifestations to its final stage. The first part of the monograph consists of a comprehensive historical review of the discovery of vitamins, a discussion of the present status of the chemistry of vitamin B, its synthesis, physical and chemical properties, the interrelationship of vitamins, hormones and ferments, and the present status of the question of symptom complex of avitaminoses. The author studied the clinical picture of B avitaminosis in 9 dogs and 60 pigeons. Simultaneous control chronic starvation experiments were carried out on 3 dogs and 10 pigeons. After careful observations for a period of two months, the 9 normal young dogs were placed on a diet from which all thermolabile and some of the thermostable components of vitamin B complex were carefully excluded. This was accomplished by autoclaving the food for four to five hours at a temperature of from 120 to 125 C. Cod liver oil and lemon or orange juice were added to supply vitamins A and D and C. Careful clinical and laboratory observations, supplemented by gross and microscopic postmortem studies, suggested to the author that the clinical picture of B avitaminosis is primarily dependent on changes in the metabolism of the animal and its neuroendocrinologic imbalance. Among the more characteristic symptoms noted were loss of weight, change in the appearance of the feces, loss of appetite, vomiting, loss of heat, motor and sensory disturbances, cutaneous lesions and change in the behavior. The author appreciates the fact that avitaminosis is not the cause of any disease per se but that it prepares the soil for it. The problem for the physician is to recognize the earliest manifestations of avitaminosis, their relationship to certain diseases which follow them, and their treatment while they are still reversible. This is a worth while contribution because of the carefully planned and rigidly controlled observations. A fairly extensive bibliography completes this interesting monograph in Russian.

Acute Response of Guinea Pigs to the Inhalation of Ketone Vapors. By H. Specht, Associate Research Physiologist, J. W. Miller, Pathologist, P. J. Valaer, Junior Chemist, and R. R. Sayers, Senior Surgeon. From the Division of Industrial Hygiene, National Institute of Health, Federal Security Agency, U. S. Public Health Service. National Institute of Health Bulletin No. 176. Paper. Price, 15 cents. Pp. 66, with 39 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1940.

This small publication is one of a long series that has continued over several years concerned with the dangers of industrially used volatile solvents. This particular study is concerned with eleven ketones, of which acetone (dimethyl ketone) is the best known representative. To the vapors of these several substances, in varying concentrations, guinea pigs were exposed under well controlled conditions. Injurious actions were regularly encountered in direct proportion to the concentration of the inhaled vapor, in relation to exposure time and, in the case of homologous straight chain methyl ketone, the probability of injury with relation to the number of carbon atoms present. Irritation of the nasal mucosa, which precedes more damaging effects, is regarded as providing some warning properties during the inhalation of these ketones. In this entire series of publications, observations have been made only to acute responses to comparatively high concentrations of the volatile solvents. Commonly the concentrations employed exceed those likely to arise in actual industrial exposure. In the acetone experiment, exposures were provided to 1, 2 and 5 per cent of vapors by volume. Translating this into parts per million, 2 per cent becomes 20,000 parts per million, which quantity may be little anticipated in open industrial areas. No information is available from these studies as to possible damage from much lower concentrations associated with long periods of exposure represented by weeks and months. In view of the use of some ketones in military and naval materials, this publication is doubly valuable because of its timeliness.

The Rôle of the Liver in Surgery. By Frederick Fitzherbert Boyce, B.S., M.D. Awarded the Quinquennial Samuel D. Gross Prize for Research in Surgery by the Philadelphia Academy of Surgery in 1940. Cloth. Price, $5. Pp. 365, with 44 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

This monograph was awarded the quinquennial Samuel D. Gross prize for research in surgery by the Philadelphia Academy of Surgery in 1940. The author emphasizes the concept that the liver is important in surgical conditions and substantiates it with personal research work. He brings out the idea that various individuals have a "hepatic weakness" and are liable to "liver deaths" following any type of surgery. The first chapter of the monograph deals with classification, reports of experimental observations and the evolving of the author's concept of the hepatorenal syndrome. Liver function tests are critically evaluated. The author's vast experience with the Quick hippuric acid test is reported. Results in health and the effects of anesthesia, postoperative states, biliary tract disease, thyroid disease and other conditions are given and elaborated on. A large chapter is devoted to the role of the liver and jaundice in hemorrhagic diathesis. This is an excellent summary of the historical background and the present status of the entire subject. The various tests are evaluated and discussed, and the author makes an eloquent plea for more frequent use of the serum volume index, a test which can be made with a minimum of laboratory equipment and which checks favorably with the results obtained by the more elaborate Quick prothrombin time determination. The practical point emphasized throughout is the existence of the "hepatic weakling," persons with much reduced hepatic reserve. These people are poor surgical risks, and the author believes that liver function tests should become as much a routine preoperative procedure as urinalysis in order that proper preoperative preparation may prevent catastrophes. The monograph is an excellent presentation, and its many practical points make it deserving of wide circulation among the profession. It is worthy of study by internists, general practitioners and pediatricians as well as by surgeons.

Notter & Firth's Hygiene. Revised by L. C. Adam, M.B., B.S., Assistant Medical Officer, Public Health Department, London County Council, London, and E. J. Boome, M.B., Ch.B., M.R.C.P., Principal Assistant Medical Officer, Public Health Department, London County Council. Tenth edition. Cloth. Price, $3.50. Pp. 518, with illustrations. New York, Toronto & London: Longmans, Green & Co., 1940.

Since this work was last revised in 1921, the present edition has required the addition of much new material. Furthermore, certain parts of the original text have been deleted, although the material of historical interest has been retained. In England new legislation, such as the Public Health Act of 1936, the Housing Act of 1936 and the Food and Drug Act of 1938, has had a distinct influence in social conditions and a description of these acts is included in the text. The early chapters deal with air, water, food, soils, refuse and excreta disposal, and personal hygiene. There is also included material on speech and its disorders, oral hygiene, first aid, vital statistics and the climate and weather. While an attempt has been made to bring the book up to date, recent discoveries are not always included. For example, vitamin B_2 is considered as the pellagra-preventive factor. The prevalence of impetigo contagiosa in newborn nurseries is not mentioned. The value of immune globulin in measles receives no notice. In general, however, the material in the book should be of interest to physicians, nurses and all others interested in public health.

The Care of the Psychiatric Patient in General Hospitals. By Franklin G. Ebaugh, M.D., Director, Colorado Psychopathic Hospital, Denver. Official Bulletin No. 207. Cloth. Price, $1. Pp. 79. Chicago: American Hospital Association, 1940.

The author has spent much time in surveying and encouraging psychiatric education in the universities. This brochure is a result of his contemporary interest in psychiatric care of patients in general hospitals, and it clearly indicates the present trend. The advantages of caring for psychiatric patients in hospitals where the assistance of medical, surgical and laboratory services can be called on are obvious. Ebaugh outlines various types of hospital organizations and lays down general principles of management. Examples of existing psychiatric units are given as well as estimates of costs which are extremely inaccurate and much too low. The book is useful primarily for the arguments included in the first chapters. In them the author has written a concise and convincing document which can be used to advantage in convincing hospital administrators and hospital directors of the need and wisdom of psychiatric services and units in general hospitals.

Communicable Diseases. By Nina D. Gage, A.B., M.A., R.N., Superintendent of Nurses, Newport Hospital, Newport, R. I., and John Fitch Landon, A.B., M.D., Attending Physician, Willard Parker Hospital, New York. With the collaboration of Grace M. Longhurst, R.N., Superintendent of Nurses, Mount Morris Tuberculosis Hospital, Mount Morris, N. Y., and George F. Hoch, A.B., M.D., Associate Urologist, St. Luke's Hospital, New York City. Second edition. Cloth. Price, $3.50. Pp. 411, with 40 illustrations. Philadelphia: F. A. Davis Company, 1940.

Based on the premise that the nursing of communicable diseases is a specialty, this book has been prepared to aid in the education of competent communicable disease nurses. Since it is essential that such nurses be thoroughly familiar with both the theory and the practice of this specialty, the book includes descriptions of the course of the various communicable diseases and the methods of treatment. In addition, the general principles underlying medical asepsis and technic are amply stressed. In this edition revisions have been made in keeping with the advances which have occurred in the therapy of communicable diseases. A chapter on sulfanilamide and its derivatives has been added. The volume is well illustrated and constitutes an admirable textbook for the nurse desirous of increasing her knowledge of the communicable diseases.

Znachenie golovnogo mozga v kholesterinovom obmene (k voprosu o roli neyroglii v patogeneze kholesterinemiy). [By] P. D. Gorizontov. [Role of Brain in Cholesterol Metabolism (Role of Neuroglia in Pathogenesis of Cholesterinemia)]. Paper. Price, 7 rubles, 50 kopecks. Pp. 131, with illustrations. Moscow: Izdanie Pervogo Moskovskogo Meditsinskogo Instituta, 1940.

Gorizontov produced aseptic meningoencephalitis in dogs by subdural injection into the brain of either turpentine or silver nitrate. The comparative study of the blood cholesterol of the afferent arteries of the brain and of the blood cholesterol level of the efferent vessels of the brain demonstrated the development of hypercholesteremia in the experimental animals. This could not be explained on the basis of mobilization of cholesterol from the lipid depots of the brain; the author interprets it as the result of the increase of cholesterol synthesis in the brain. He correlated the various biochemical data obtained in his experiments with the morphologic alterations in the brain of the same animals and established the dependence of the blood cholesterol levels in his animals on the reactive processes of the ectodermal neuroglia cells of the brain. In the light of the view advanced by the author, the role of neuroglia in cholesterol metabolism is that of a detoxifying process; toxic brain lesions themselves may be regarded as the result of disturbance of metabolic function of the neuroglia. Thus, hypercholesteremia as a result of hyperfunction of the neuroglia cells of ectodermal origin plays an important part in the lesions of internal organs, as for example in the development of atheromatosis of the aorta and of the arteries. The monograph is in Russian, with a brief summary in German. It is supplemented by an extensive bibliography on the subject.

Special Report of the New York State Commission to Formulate a Long Range Health Program on Health Mobilization for Defense. Legislative Document (1941) No. 43. Paper. Pp. 64. Albany, 1941.

Any emergency that focuses the emotions and attention of a nation on a single objective finds a multitude of ideas, individuals and organizations seeking to hitch this emotional energy to diverse programs. It is futile to criticize such a tendency, and it is hard to measure its results. The problems this commission sets itself involve almost everything that concerns health in war or peace from "forming of mobile emergency squads of physicians, surgeons and nurses capable of being immediately transported to any area experiencing a catastrophe" to the "prevention of panic among the civilian population." For this purpose the familiar pattern of a "central agency" with committees in every county representative of all health agencies is suggested. These committees are to determine and evaluate the "health resources in each county," which work, when completed, is to provide the official authorities "with a blueprint of the health facilities in each county."

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ALTITUDE AND HEART DISEASE

To the Editor:—**I would appreciate information on the effect of high altitudes on cardiac patients. The patient in mind has arteriosclerotic heart disease and complains only of dyspnea on moderate exertion. On one occasion he awoke during the night choking for breath. This episode cleared up in about a half hour without medication. The patient desires to move from this part of the country and to settle in Arizona (southern portion) or New Mexico. Is the altitude in these locations suitable for the type of patient described? If there are any specific locales where this can be obtained, I should like to know of them even if they do not happen to be in the states mentioned.**

M.D., Illinois.

ANSWER.—The essential point in the problem of the case cited is not that of the effect of altitude but that of the treatment of this condition at any altitude. From the story it seems certain that there is a markedly limited myocardiac reserve especially involving the left ventricle, provided the chief symptom is dyspnea and not substernal pain. It is of vital importance, therefore, to plan the life of the patient to avoid the strain of overactivity, nervous tension and overeating. He is evidently good for but little under the circumstances and needs almost complete rest until he has recovered adequate reserve. Even more important is his need of digitalis. He should be digitalized in a conservative way, and the digitalization should be maintained thereafter by daily rations. He may take 1½ grains (0.1 Gm.) of the old strength digitalis three times a day for five to seven days, then 1½ grains daily thereafter, or he may take similar numbers of 1 grain (0.65 Gm.) doses of the U. S. P. XI standard, which is 33 to 50 per cent stronger than the old digitalis. If these measures are not effective in preventing any further failure he should also receive at intervals diuretic therapy, best in the form of mercurials. Life can be much prolonged and made more comfortable by the measures just cited, no matter what the altitude is, although it would be reasonable to advise that altitudes of 10,000 feet or more be avoided and that effort in hilly country also be avoided at any altitude. If the measures of treatment outlined are carried out there is no particular reason why the patient should not settle in Arizona or New Mexico.

SURGICAL RELATIONS OF BLADDER, URETERS AND UTERUS

To the Editor:—**Operation on a cystocele has progressed to the following point: The bladder has been separated from the vaginal wall and the uteropubic fascia, but the fascia has not been separated from the vaginal wall; the bladder has been separated from the uterus for a distance of 1 cm. Under such conditions, please inform me as to the following: 1. While the operator is working, where, in relation to the structures he observes, do the ureters lie and enter the bladder? 2. In freely continuing the stripping up of the bladder using scissors to cut (bands) along the lateral region involving this work, what danger is there, if any, of injuring the ureter? 3. If the separation of the bladder from the uterus continues, in practically all cases a round cordlike structure presents which seems to arise at the side of the cervix at the level of the internal os and swings up on to the bladder. Could or does this structure contain the ureter? I feel that many operators in general practice are hampered in this operation for fear of injuring the ureter. If reasonable care is used, is there any danger of this? I would appreciate it if these questions were answered from the standpoint of surgery rather than that of normal anatomy.**

M.D., Minnesota.

ANSWER.—1. The ureters enter the bladder obliquely convergent, ensheathed in extensions of the musculofascial covering of the bladder. They are approximately 5 cm. apart as they approach the bladder before entering it, and they lie farther apart at a higher level.

2. The bands referred to are evidently the pillars of the bladder. In normal cases the ureters are 1 cm. lateral to the pillars. In cases of cystocele they lie still more lateral.

3. In generously wide separation of the bladder from the uterus there is little danger of ureteral injury—much less hazard of ureteral injury in a cystocele operation than in an abdominal complete hysterectomy.

For the relationships of the ureters to the bladder, to the fascial planes and to the uterus, reference is made to Curtis, Anson and Beaton: The Anatomy of the Subperitoneal Tissues and Ligamentous Structures in Relation to Surgery of the Female Pelvic Viscera (*Surg., Gynec. & Obst.* **70**:643 [March] 1940), particularly figures 6 and 7.

ENLARGED BREASTS AND IMPOTENCE IN MAN

To the Editor:—**A man aged 41, with a normal past history, was essentially well up to seven years ago. His only complaint now is moderate impotence. He completes the sexual act once weekly but not with the same sexual satisfaction as formerly. There is a great reduction in the sexual urge. The sexual urge and power were good until seven years ago, at which time the patient noticed a sudden enlargement of both breasts. Both breasts continued to enlarge for several months up to the size of small grapefruits, at which size they have remained. All physical examinations and blood tests gave negative results. A roentgenogram of the sella turcica also revealed no abnormalities. The only treatment to which the patient responded was injections of testosterone propionate, which he received twice weekly for five weeks, but the improvement was only temporary while he received these injections. Kindly discuss diagnosis and treatment.**

M.D., New Jersey.

ANSWER.—In general, it should be remembered that in the majority of cases impotence has its origin in a psychic disturbance of some sort and that great care should be exercised in interpreting the improvement which follows any "specific" treatment. Many patients who report improvement in their sexual abilities following injections of hormones improve just as much after injections of sterile oil or sterile water and may improve more from a good vacation.

In preface, it also should be remarked that not every man who has enlargement of the breasts is suffering from a serious glandular disturbance; in many instances the cause remains unknown, the treatment is unsatisfactory but the prognosis for life is good.

If a localized inflammatory or neoplastic condition of the breast has been eliminated in this case (Neal, M. P., and Simpson, B. T.: Diseases of the Male Breast, *J. Missouri M. A.* **27**:565 [Dec.] 1930. Charache, Herman: Tumors of the Male Breast, *Surgery* **7**:889 [June] 1940), comparatively few serious conditions remain to be considered. It is unlikely that this patient has had a tumor of the adrenal cortex for seven years; most patients with such a condition "run a rapid course." Furthermore, it would be unusual to have this condition occur in a man; to date only 8 proved cases of adrenal cortical tumors in males have been reported. This subject has been reviewed by Kepler (Tumors of the Suprarenal Cortex, Basophilic Tumors of the Pituitary Body and Allied Diseases, in the Cyclopedia of Medicine, Surgery and Specialties, Philadelphia, F. A. Davis Company, 1939); he cited the many other obvious disturbances which are usually found when a tumor is present.

If this patient has an adrenal cortical tumor he should have, in addition to impotence and changes in the breast, changes in the skin, peculiar obesity, hypertension, glycosuria and hyperglycemia, increased concentrations of the chlorides and sodium in the blood, increased carbon dioxide combining power of the blood, lowering of the amount of potassium in the blood and so on. Hormone assays should be made. These methods are described by Simpson and his associates (Simpson, S. Levy; deFremery, P., and Mac Beth, Alison: The Presence of an Excess of Male [Comb-Growth and Prostate-Stimulating] Hormone in Virilism and Pseudohermaphroditism, *Endocrinology* **20**:363 [May] 1936. Simpson, S. Levy, and Joll, C. A.: Feminization in a Male Adult with Carcinoma of the Adrenal Cortex, *ibid.* **22**:595 [May] 1938) and by Glass and Bergman (Subclinical Adrenogenital Syndrome, *ibid.* **23**:625 [Nov.] 1938).

An intravenous urogram should also be made in this case further to exclude the possibility of an adrenal cortical tumor.

Minor degrees of gynecomastia have been noted in the newborn, in the presence of exophthalmic goiter, in patients with Addison's disease under treatment and among growing boys and patients suffering from atrophic cirrhosis of the liver and hemochromatosis.

After a surgical lesion of the adrenal cortex has been excluded, the breasts may be removed in order to eliminate any possibility of a malignant lesion developing at a later date and because of the psychic effect. Another reason which is probably just as important as either of these is that amputation will permit the patient's clothes to fit and he will be able to appear in a bathing suit without embarrassment.

Androgenic therapy is effective in cases in which there is definite organic disease of the testes. It is of little use in psychic or senile impotence. When administered to castrated or eunuchoid persons, testosterone propionate is effective in restoring potency, but this lasts only as long as therapy is maintained, since it is purely substitutional. The fact that the patient responded to injections of testosterone propionate might indicate that he actually has a deficiency of secretion of male sex hormone. Occasionally such a condition results in enlargement of the breasts.

CHRONIC NEPHRITIS IN EARLY CHILDHOOD

To the Editor:—A boy aged 5 years has been ill for the past five and one-half months. His illness began with a gradual loss of strength, with increasing edema, until generalized anasarca had developed. When I first saw him, his weight was 90 pounds (41 Kg.), his normal weight being 45 pounds (20 Kg.). The urine contained albumin (4 plus), hyaline and granular casts and an abundance of blood. His urinary output for the past four days had averaged 4 to 5 ounces (120 to 150 cc.). An abdominal paracentesis yielded about a half gallon (2 liters) of clear fluid. Treatment with transfusion, serum and concentrated dextrose resulted in an increased urinary output, as high as 40 ounces (1,200 cc.) daily. There was a reversal of the albumin-globulin ratio. I have followed the case for about two months. The urinalysis has not varied much from that given. The output gradually decreases to about the average of 8 to 10 ounces (240 to 300 cc.) daily, with an average intake of 25 ounces (750 cc.). The edema and ascites, of course, gradually increase. Intravenous administration of a 50 per cent solution of dextrose has no effect on the urinary output. I recently resorted to acacia, 50 cc. in 200 cc. of distilled water, once daily for three days. This resulted in diuresis amounting to 40 ounces of urine daily, gradually decreasing to 10 ounces on the average. Anemia is severe despite large doses of iron. Blood transfusions are numerous, of necessity. The boy seems to feel good and would like to be up and playing. Have you any suggestion as to treatment and prognosis?

M.D., Texas

ANSWER.—The description is typical of chronic diffuse nephritis or, perhaps better, chronic nonspecific nephritis, because this term implies that the cause is unknown. The usual course of events in patients with this sort of disease is intermittently downhill with edema which is extremely hard to control under the most favorable conditions. However, the prognosis is not absolutely bad because if life can be maintained for a year or so during this edematous phase of the disease there is a possibility that patients with this condition may "go dry" and be free from the distressing anasarca.

In the meantime such patients may be placed on a high protein, salt-free diet, along with as many fluids as they desire. Available diuretics do not work consistently. If the patient has a low basal metabolism, it is sometimes helpful to use thyroid in large doses. One would not repeat the administration of acacia because acacia is not excreted and is stored in the liver, there being some possibility that hepatic damage may result.

While ordinarily the prognosis for such a patient is bad at this age period, it may be said that if the patient can be carried through the edematous phase into the dry period his chance of recovery is better than it would be in an older child. This is because many patients with this condition are adversely influenced by adolescence.

CYST OF SCALP IN INFANT

To the Editor:—A baby girl aged 11 months has a cyst 3.2 by 3.5 by 0.75 cm. lying under the scalp in the median line covering the forward crevice of the anterior fontanel. The cyst has a definitely circumscribed circular border and is filled with a light colored translucent fluid (as indicated by the transmission of light, lighter colored than blood usually appears. Pressure does not seem to reduce the quantity of fluid, but it causes distress and pain if pressure is increased. When the child accidentally struck the cyst with her bottle, she fainted, until the mother sprinkled her face with cool water. The cyst was first discovered and examined when she was 5 months old. It was then about 2 cm. in diameter and 2 or 3 mm. in depth and has been gradually increasing in size since. The child's reflexes are normal, as also her mental and physical development. She is the first child of healthy young parents. The Wassermann reaction is negative. She had a normal, easy birth and has had normal development since. For a few months after birth she had a small area of scalp slightly elevated at the vertex, on which a succession of small herpes blisters developed and broke. Gradually the skin healed and now is normal. This appears to me to be a meningocele rather than a sinus pericranii with a content of venous blood, as suggested by some one. From this description can you make a probable diagnosis and prognosis and suggest proper treatment?

M.D., Wisconsin.

ANSWER.—A differential diagnosis is necessary to determine the nature of the cyst of the scalp described in this question. The most common tumors of the scalp are the sebaceous cysts or wens. These cysts develop as a result of the plugging of the duct of a sebaceous gland. They lie primarily in the dermis and extend into the subcutaneous tissue but do not as a rule involve the galea. The skin over such a cyst may become stretched and thin and often has a bluish appearance.

Dermoid cysts develop at lines of suture and are more deeply seated than sebaceous cysts. On roentgen examination thinning of the bone may be observed, and the cyst may lie in contact with the dura. Dermoid cysts may contain epithelium, hair or cutaneous glands.

Angiomas of arterial, venous and capillary origin may occur on the scalp. At times these tumors of blood vessels are connected with diploic vessels or the meningeal arteries.

The condition described by Stromeyer as sinus pericranii is in reality nothing more than a greatly dilated vein and is seen only in conjunction with tumors of the brain.

Spurious meningocele, which was first described by Billroth, is a term applied to collections of cerebrospinal fluid under the scalp but external to the cranium and dura. In all instances of this condition there is some history of trauma.

Cephaloceles may be divided into meningoceles, encephaloceles and encephalocystoceles. These lesions are present at birth and are soft in consistency. They pulsate and become tense when the child cries. If the tumor is compressed, compression symptoms may be produced: the crying child will become quiet, the pulse will become slow and the pupils dilated. The congenital nature of these tumors usually assures the diagnosis.

In the case in question it is stated that the tumor was not noted until the infant was 5 months of age. It might be suggested that the history be carefully investigated as to the presence of the tumor since birth.

The dermoid cysts most commonly occur in the neighborhood of the anterior fontanel. They are irreducible and are of a doughy consistency on palpation. Roentgen examination of the skull should reveal involvement of the bone. Tumors of blood vessels usually show pulsation.

Prognosis would depend on the proper diagnosis and the dexterity of the surgical removal of the cyst, if this procedure seemed indicated.

PERORAL AND INTRAVENOUS CHOLECYSTOGRAPHY

To the Editor:—Would you give me the following information about intravenous cholecystography: First, can this procedure be used safely in all cases in which the peroral method is not suitable or in which the peroral method does not produce any shadow of the gallbladder? Second, where can I procure the materials for this cholecystography, and what maximum dose do you recommend? Third, do you believe that in a certain number of cases the intravenous method can give positive results when the peroral method fails to do this even after double doses?

H. B. Eisenstadt, M.D., Port Arthur, Texas.

ANSWER.—There are two agents in common use for cholecystography: soluble iodophthalein U. S. P. and phentetiothalein sodium. The latter substance, according to New and Nonofficial Remedies, is better suited for intravenous injection. The intravenous injection of soluble iodophthalein may be safely used for cholecystography to check the results obtained by the oral method of administration of the dye. The intravenous technic is used routinely for cholecystography in many clinics. Preparations of soluble iodophthalein accepted by the Council on Pharmacy and Chemistry are supplied by the Abbott Laboratories, the Eastman Kodak Company and the Mallinckrodt Chemical Works. The Mallinckrodt Chemical Works supplies the only brand of phentetiothalein sodium accepted by the Council. Directions for dosage are given in New and Nonofficial Remedies. It is true that in a small number of cases shadows will be seen following the use of the intravenous method although the oral method will not give results.

DERMATITIS FROM SULFATHIAZOLE

To the Editor:—Is photosensitization to sulfathiazole considered a contraindication to future employment of this drug?

Edward Suckle, M.D., Coatesville, Pa.

ANSWER.—Sulfathiazole, of all the sulfanilamide derivatives, seems to be the drug which has the greatest percentage of instances of dermatitis associated with its use. Experience has shown that if a patient has once had a "drug rash" in the course of sulfathiazole therapy, irrespective of whether or not the eruption was associated with photosensitivity, the second administration of the drug will generally be followed by a somewhat more severe rash than occurred the first time the drug was given. While this occurrence is not invariable, it has been noted so frequently that the development of a cutaneous rash in the course of sulfathiazole therapy is generally considered a contraindication to the further use of the drug.

TUBERCULIN IN THERAPY OF OCULAR DISEASE

To the Editor:—A patient with hemorrhagic choroiditis has been given tuberculin for therapy. I began treatment with tuberculin R ("Rückstand"), Mulford. This preparation has been discontinued by Sharpe & Dohme. I should like your opinion as to the best preparation I might use in its stead.

M.D., New York.

ANSWER.—The best preparation to be used instead of tuberculin R is what is known as Koch's old tuberculin. This product is obtainable in powder form, and dilutions of varying strength should be made fresh at intervals of not longer than one month. It is important that a high dilution be used at the beginning of the treatment, especially when there is any activity of the tuberculous lesion present. It is advisable to begin with a dilution of 1:1,000,000 and gradually increase the concentration, it remaining always just below the threshold of reaction.